Medicare Health Outcomes Survey

Baseline Report

Cohort IV
2001

Centers for Medicare & Medicaid Services

Health Services Advisory Group

HEALTH SERVICES ADVISORY GROUP

Medicare Health Outcomes Survey
Cohort IV Baseline Report

EVALUATION AND FEEDBACK FORM

FAX BACK THIS FORM TO HSAG, ATTENTION:
LAURA GIORDANO AT 602-241-0757

-OR-

CONTACT THE MEDICARE HEALTH OUTCOMES SURVEY
INFORMATION AND TECHNICAL SUPPORT
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The Centers for Medicare & Medicaid Services (CMS) and Health Services Advisory Group (HSAG) welcome your comments and feedback on this report. Please use the comment section below for your questions, comments, issues or concerns.

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In order to assure a complete and timely response, please complete the following information:

Name: _____ **Date:** _____

Title: _____

Organization: _____

If M+CO, Plan ID Number: _____

Phone Number: _____ **Fax:** _____

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MEDICARE HEALTH OUTCOMES SURVEY
SAMPLE EXECUTIVE SUMMARY

The following is a sample version of the Executive Summary sent to all participating M+COs in June 2002.

The figures, tables, and text in this document contain sample plan and state level data. In addition to the sample plan and state level data, all references to the *HOS Total* reflect actual data.

The Medicare HOS Information and Technical Support Telephone Line (1-888-880-0077), as well as the HOS E-mail Address (*azpro.hos@sdps.org*), are available to provide assistance with report questions and interpretation.

Executive Summary

The Centers for Medicare & Medicaid Services (CMS) is committed to monitoring the quality of care provided by Medicare + Choice Organizations (M+COs). The Medicare Health Outcomes Survey (HOS) is the first health outcomes measure for the Medicare population in managed care settings. The HOS design is based on a randomly selected sample of individuals from each participating M+CO, and measures their physical and mental health over a two-year period.

The following report presents baseline results for your plan, **HXXXD**, from the 2001 Medicare HOS *Cohort IV Baseline* survey. In addition, aggregate and state level data are provided for your state, **Sample XXXX**. The state level data are provided only to facilitate internal quality improvement activities. **Please be advised that the baseline information in this report is not suitable for plan level comparisons. Therefore, these data should not be utilized for public release or marketing purposes.**

THE HOS MEASURE

The HOS measure is an assessment of a health plan's ability to maintain or improve the physical and mental health functioning of its people with Medicare over a two-year period of time. The functional status of the elderly is known to decline over such a period.[1] The differences between the baseline and the two-year follow up physical and mental health scores are aggregated at the plan level, yielding HOS plan level Performance Measurement results. The *Cohort I* Performance Measurement results were released in 2001. The Performance Measurement results for *Cohort IV Baseline* (scheduled for release in 2004) will incorporate data from the 2003 *Cohort IV Follow Up* survey.

This HOS baseline report is part of a larger effort by CMS to improve the health care industry's capacity to sustain and improve the health status and functioning of its Medicare population. The *Cohort IV Baseline* results are intended to assist M+COs and Quality Improvement Organizations (QIOs) in identifying areas requiring potential improvement. The overall goals of HOS are to help beneficiaries make informed health care choices and to promote quality improvement based on competition.

The HOS instrument consists of three components: the SF-36® Health Survey[2, 3]; questions for case mix and risk adjustment purposes; and questions added by CMS as required by the 1997 Balanced Budget Act. Physical and mental functioning are measured with the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores, which are derived from the SF-36®.

[1] National Committee for Quality Assurance. *HEDIS 3.0/1998, Volume 6: Health of Seniors Survey Manual*. Washington DC: NCQA Publication, 1998.
[2] SF-36® is a registered trademark of the Medical Outcomes Trust.
[3] Ware JE, Snow KK, Kosinski M, Gandek B. *SF-36® Health Status Survey Manual and Interpretation Guide.* Boston: The Health Institute, New England Medical Center, 1993.

RESPONSE RATES

The 2001 *Cohort IV Baseline* Medicare HOS included a random sample of 190,523 beneficiaries, including both the aged and disabled, from 197 managed care plans. Of the 190,523 individuals sampled, 6,041 were determined to be invalid members during the survey administration. Invalid members of the sample meet one of the following criteria: deceased; not enrolled in the M+CO; have an incorrect address and phone number; or have a language barrier. The removal of the invalid members from the total sample yields a sample of 184,482. This sample is referred to as the *Cohort IV Baseline eligible sample*. Of the 184,482 beneficiaries in the eligible sample, 68.4% (126,255) returned a completed baseline survey. For the purposes of this baseline report, a completed survey is defined as one that could be used to calculate a PCS and/or MCS score.

For **your** plan, 1,000 individuals were originally sampled; however, 25 were determined to be invalid members, yielding an eligible sample of 975 beneficiaries. Of the 975 beneficiaries in your plan's eligible sample, 664 returned a completed survey. Therefore, your plan's overall response rate was **68.1%**.[4] Table A1 presents the response rates for all plans in Sample XXXX.

TABLE A1
RESPONSE RATES FOR THE STATE OF SAMPLE XXXX

	SAMPLE SIZE	INVALIDS	RESPONDENTS	RESPONSE RATE (%)
HOS Total	190,523	6,041	126,255	68.4
All XX Plans	5,000	173	3,298	68.3
Plan A	1,000	38	668	69.4
Plan B	1,000	37	657	68.2
HXXXD	1,000	25	664	68.1
Plan C	1,000	41	653	68.1
Plan D	1,000	32	656	67.8

Please note, the plan designated as "Plan A" in this table does not necessarily correspond to "Plan A" in subsequent tables. Please be advised that the baseline information in this report is not suitable for plan level comparisons, and should not be utilized for public release or marketing purposes.

[4] Response Rate = [Respondents/(Sample Size – Invalids)] x 100% = [Respondents/Eligible Sample] x 100%

DISTRIBUTION OF THE ELIGIBLE SAMPLE

The 184,482 members of the *Cohort IV Baseline eligible sample* (as defined on page A2) included 171,870 seniors (age 65 or older). Of the 171,870 eligible seniors sampled, 118,276 completed the baseline survey. This group of seniors comprises the *Cohort IV Baseline analytic sample*. The analytic sample is the focus of all analyses within this report.

For **your** plan, 975 beneficiaries were eligible for the survey, including 908 seniors (age 65 or older). Of the 908 seniors in your plan, 620 completed a baseline survey. Therefore, your plan's *Cohort IV Baseline analytic sample* is **620**. Table A2 presents the distribution of the eligible sample for all plans in Sample XXXX.

TABLE A2
DISTRIBUTION OF THE ELIGIBLE SAMPLE FOR ALL PLANS IN THE STATE OF SAMPLE XXXX

	TOTAL ELIGIBLE	ELIGIBLE UNDER 65	ELIGIBLE 65 AND OVER	ANALYTIC SAMPLE
HOS Total	184,482	12,612	171,870	118,276
All XX Plans	4,827	320	4,507	3,100
Plan A	968	60	908	626
Plan B	962	67	895	622
HXXXD	975	67	908	620
Plan C	959	65	894	616
Plan D	963	61	902	616

Please note, the plan designated as "Plan A" in this table does not necessarily correspond to "Plan A" in other tables. Please be advised that the baseline information in this report is not suitable for plan level comparisons, and should not be utilized for public release or marketing purposes.

SF-36® SUMMARY MEASURES

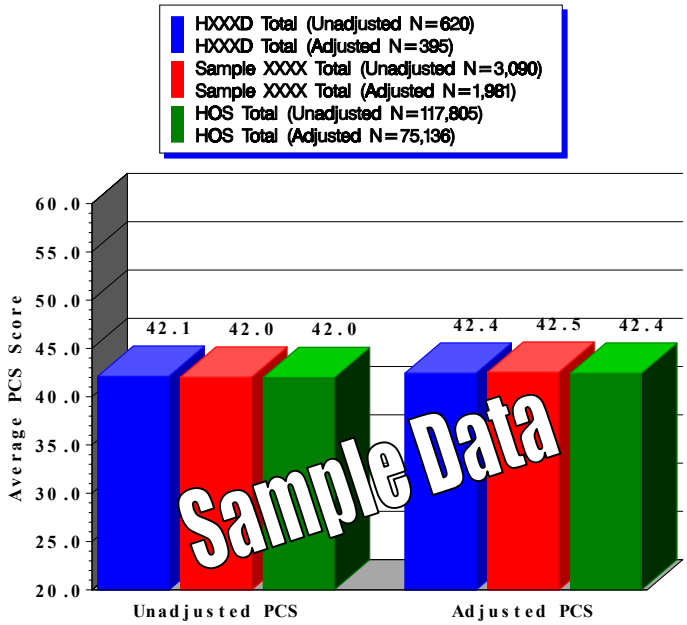
Both PCS and MCS scores are calculated utilizing the eight scales of the SF-36®: Physical Functioning (PF); Role-Physical (RP); Bodily Pain (BP); General Health (GH); Vitality (VT); Social Functioning (SF); Role-Emotional (RE); and Mental Health (MH). The summary scores are normed to the values for the 1998 **general** United States population, so that a score of fifty represents the national average for a given scale or summary score.

Physical Health

PCS scores are a reliable and valid measure of physical health. Very high PCS scores indicate no physical limitations, disabilities or decline in well being, high energy level, and a rating of health as "excellent."[5] Very low PCS scores indicate limitations in self care, physical, social and role activities, severe bodily pain, frequent tiredness, and a rating of health as "poor." The PCS score is highly correlated with the PF, RP, and BP scales.

The figure below, Figure A1, depicts the average unadjusted and adjusted PCS scores for your plan, state, and national HOS totals. These scores have been adjusted for demographics, chronic medical conditions, and HOS study design. For more details on the case mix adjustment, please refer to the Methodology subsection of the Overview (B). It is important to note that the 1998 general population **elderly** norms reflect a PCS mean score of 42.6.

FIGURE A1: PHYSICAL COMPONENT SUMMARY (PCS) SCORES FOR PLAN HXXXD, SAMPLE XXXX TOTAL, AND HOS TOTAL



[5] Ware JE, Kosinski M, Bayliss MS, McHorney CA, Rogers WH, Raczek A. Comparison of methods for the scoring and statistical analysis of SF-36® health profiles and summary measures: summary of results from the Medical Outcomes Study. *Med Care* 1995; 33(Suppl. 4): AS264-AS279.

The following table, Table A3, depicts the unadjusted and adjusted PCS scores (including the corresponding standard deviations) for all plans in Sample XXXX.

TABLE A3
PHYSICAL COMPONENT SUMMARY SCORES (PCS) FOR ALL PLANS IN THE STATE OF SAMPLE XXXX

	UNADJUSTED AVERAGE PCS SCORE (SD)	ADJUSTED AVERAGE PCS SCORE (SD)
HOS Total	42.0 (11.6)	42.4 (7.0)
All XX Plans	42.0 (11.4)	42.5 (7.0)
Plan A	42.4 (11.7)	42.8 (6.9)
Plan B	42.0 (11.2)	42.7 (7.1)
Plan C	41.8 (11.6)	42.6 (7.4)
HXXXD	42.1 (11.1)	42.4 (6.8)
Plan D	41.8 (11.5)	42.1 (7.0)

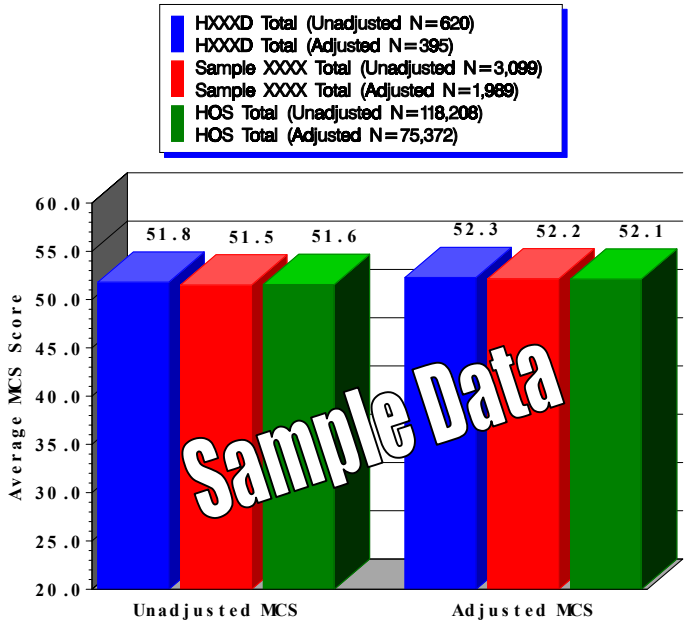
Please note, the plan designated as "Plan A" in this table does not necessarily correspond to "Plan A" in other tables. Please be advised that the baseline information in this report is not suitable for plan level comparisons, and should not be utilized for public release or marketing purposes.

Mental Health

MCS scores are a reliable and valid measure of mental health. Very high MCS scores indicate frequent positive affect, absence of psychological distress, and no limitations in usual social and role activities due to emotional problems.[6] Low MCS scores indicate frequent psychological distress, and social and role disability due to emotional problems. MCS is highly correlated with the SF, RE, and MH scales.

The figure below, Figure A2, depicts the average unadjusted and adjusted MCS scores for your plan, state, and national HOS totals. These scores have been adjusted for demographics, chronic medical conditions, and HOS study design. For more details on the case mix adjustment, please refer to the Methodology subsection of the Overview (B). It is important to note that the 1998 general population **elderly** norms reflect an MCS mean score of 52.0.

FIGURE A2: MENTAL COMPONENT SUMMARY (MCS) SCORES FOR PLAN HXXXD, SAMPLE XXXX TOTAL, AND HOS TOTAL



[6] Ware JE, Kosinski M, Bayliss MS, McHorney CA, Rogers WH, Raczek A. Comparison of methods for the scoring and statistical analysis of SF-36® health profiles and summary measures: summary of results from the Medical Outcomes Study. *Med Care* 1995; 33(Suppl. 4): AS264-AS279.

The following table, Table A4, depicts the unadjusted and adjusted MCS scores (including the corresponding standard deviations) for all plans in Sample XXXX.

TABLE A4
MENTAL COMPONENT SUMMARY SCORES (MCS) FOR ALL PLANS IN THE STATE OF SAMPLE XXXX

	UNADJUSTED AVERAGE MCS SCORE (SD)	ADJUSTED AVERAGE MCS SCORE (SD)
HOS Total	51.6 (10.5)	52.1 (3.7)
All XX Plans	51.5 (10.5)	52.2 (3.7)
Plan A	51.5 (10.7)	52.4 (3.8)
HXXXD	51.8 (10.4)	52.3 (3.5)
Plan B	51.3 (10.7)	52.2 (3.6)
Plan C	51.6 (10.3)	52.1 (3.8)
Plan D	51.3 (10.4)	51.8 (3.8)

Please note, the plan designated as "Plan A" in this table does not necessarily correspond to "Plan A" in other tables. Please be advised that the baseline information in this report is not suitable for plan level comparisons, and should not be utilized for public release or marketing purposes.

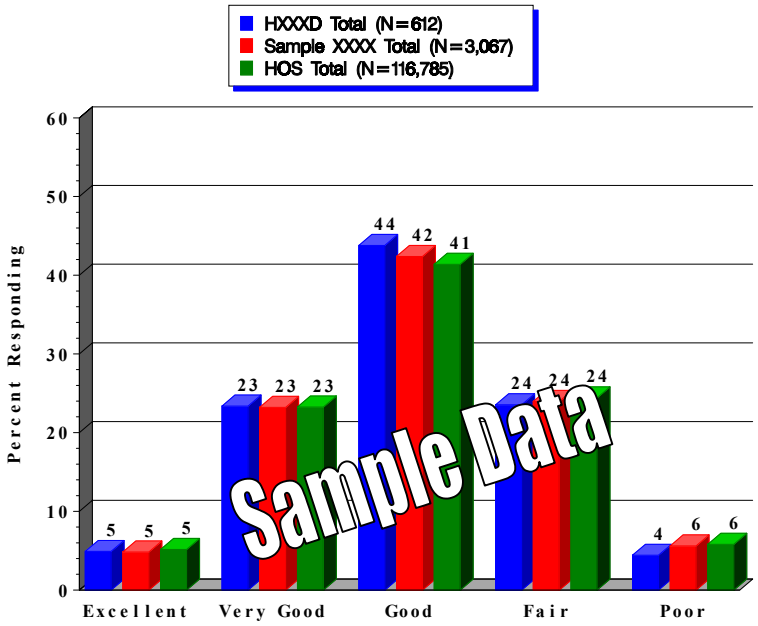
HEALTH STATUS QUESTIONS

The HOS instrument includes a number of questions on health status, including: a General Health question; a Health Transition question; a Comparative Health question; and a series of three questions which constitute a depression screen.

General Health Question

The first question in the HOS survey asks, "In general, how would you say your health is: Excellent; Very Good; Good; Fair; or Poor?" Individuals responding "Fair" or "Poor" are known to be at increased risk for near future hospitalization (i.e., within 6 months), use of mental health services, and/or mortality in five years.[7] The figure below, Figure A3, depicts the distribution of responses for your plan, state, and HOS total.

FIGURE A3: GENERAL HEALTH QUESTION FOR PLAN HXXXD, SAMPLE XXXX TOTAL, AND HOS TOTAL



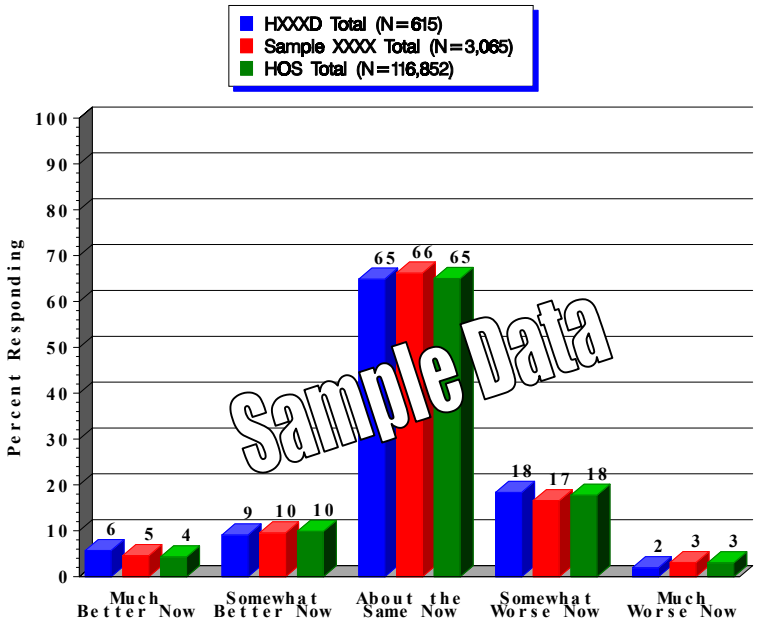
Please note, percentages may not add up to 100% due to rounding.

[7] Ware JE, Kosinski M, Keller SK. *SF-36® Physical and Mental Health Summary Scales: A User's Manual.* Boston, MA: The Health Institute, 1994.

Health Transition Question

The second question in the HOS survey asks, "Compared to one year ago, how would you rate your health in general now: Much Better Now; Somewhat Better Now; About the Same Now; Somewhat Worse Now; or Much Worse Now?" Individuals responding "Somewhat Worse Now" or "Much Worse Now" are known to be at increased risk for near future hospitalization (i.e., within 6 months), use of mental health services, and/or mortality in five years.[8] The figure below, Figure A4, depicts the distribution of responses for your plan, state, and HOS total.

FIGURE A4: HEALTH TRANSITION QUESTION FOR PLAN HXXXD, SAMPLE XXXX TOTAL, AND HOS TOTAL



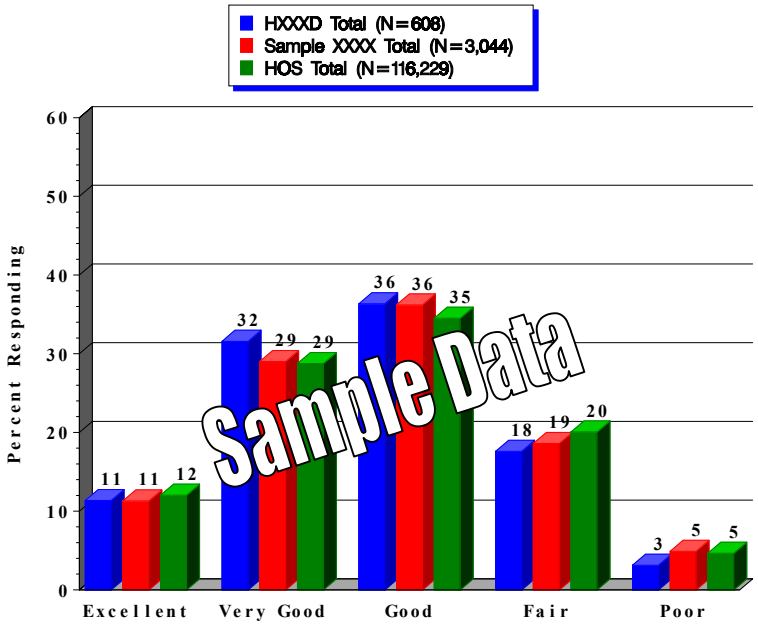
Please note, percentages may not add up to 100% due to rounding.

[8] Ware JE, Kosinski M, Keller SK. *SF-36® Physical and Mental Health Summary Scales: A User's Manual.* Boston, MA: The Health Institute, 1994.

Comparative Health Question

Question 41 on the HOS survey asks, "In general, compared to other people your age, would you say your health is: Excellent; Very Good; Good; Fair; or Poor?" The figure below, Figure A5, depicts the distribution of responses for your plan, state, and HOS total.

FIGURE A5: COMPARATIVE HEALTH QUESTION FOR PLAN HXXXD, SAMPLE XXXX TOTAL, AND HOS TOTAL

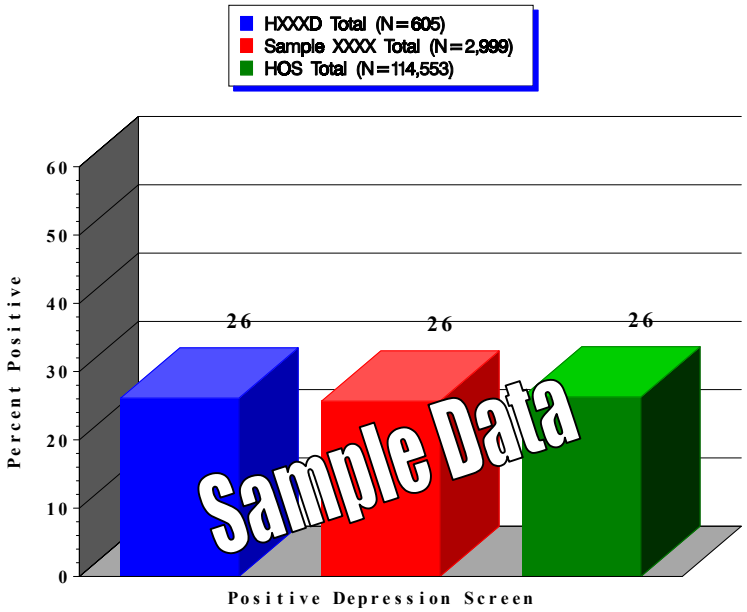


Please note, percentages may not add up to 100% due to rounding.

Depression Screen

A participant of the Medicare HOS Survey is considered to have a positive depression screen when he or she answers "yes" to *any* of the three depression questions (numbers 38, 39 or 40). Individuals with a positive depression screen may be at risk for depressive disorders.[9] These individuals may experience poor outcomes. The figure below, Figure A6, depicts the percentage of beneficiaries with a positive depression screen in your plan, state, and HOS total.

FIGURE A6: DEPRESSION SCREEN FOR PLAN HXXXD, SAMPLE XXXX TOTAL, AND HOS TOTAL



[9] Burnam MA, Wells KB, Leake B, Landsverk J. Development of a brief screening instrument for detecting depressive disorders. *Med Care* 1988; 26:775-789.

DISCUSSION

Aggregate and state level results are provided for each plan. The state level data are provided only to facilitate internal quality improvement activities. **Please be advised that the baseline information in this report is not suitable for plan level comparisons. Therefore, these data should not be utilized for public release or marketing purposes.** Major differences in plan specific rank order results may occur at the time of Performance Measurement. The CMS has developed a rigorous risk adjustment model which is used in deriving the Performance Measurement results. The Performance Measurement results for *Cohort IV Baseline* are scheduled to be released in 2004.

Although some of the baseline differences in average physical and mental health scores observed across M+COs may appear large and unlikely to be due to chance, they should be interpreted with caution. Such differences may not support a claim of better or worse health *outcomes* for any of these plans, and any such claim would be unjustified scientifically. The CMS strongly advises against such interpretations. One obvious explanation for differences in average health status scores across M+COs is that the plans serve different populations or regions differing in health status. These differences should be reflected in their average scores at baseline. Another explanation is that plans have attracted different beneficiaries varying in health status.

Additional plan level results are provided on the accompanying CD-ROM. These results include the relevant data illustrations previously provided in hard copy in the *Cohorts I, II, and III Baseline* reports. Please refer to section E for a complete description of the CD-ROM's contents.

The Medicare HOS Information and Technical Support Telephone Line (1-888-880-0077), as well as the HOS e-mail address (*azpro.hos@sdps.org*), are available to provide assistance with report questions and interpretation.

PACE Discussion

The HOS *Cohort IV Baseline* sample included beneficiaries enrolled in Program of All-inclusive Care for the Elderly (PACE) plans. There were 3,943 members sampled from 17 PACE plans. Since the PACE plans differ significantly from the M+CO plans, their data were analyzed separately. Each PACE plan received a report which displayed their specific plan results, the total of all PACE plans, and the total HOS sample (which **excludes** PACE data).

Overview

This section provides an introduction to the Medicare HOS, including a discussion of the HOS reporting process, a review of the HOS survey timeline, and a description of the HOS baseline report methodology.

INTRODUCTION TO THE MEDICARE HEALTH OUTCOMES SURVEY

In the mid-1990s, Medicare beneficiaries were joining health maintenance organizations (HMOs) and other types of managed care organizations (MCOs) in increasing numbers. It became apparent to CMS that the agency needed performance reporting requirements for Medicare managed care. In order to establish these reporting requirements, CMS, in collaboration with the National Committee for Quality Assurance (NCQA), launched the first Medicare managed care outcomes measure in the Health Plan Employer Data and Information Set (HEDIS®) in 1998.[1] The measure includes the most recent advances in summarizing physical and mental health outcomes results and appropriate risk adjustment techniques. This measure was initially titled Health of Seniors, and was renamed the Medicare Health Outcomes Survey during the first year of implementation. The name change was intended to reflect the inclusion of Medicare recipients who are disabled and not seniors (age 65 and older) in the sampling methodology.

The integration of the Medicare population into HEDIS® was achieved with the release of HEDIS® 3.0. The CMS, NCQA and others felt there was a need to develop additional measures for the Medicare population including an "outcomes" measure for HEDIS®. Traditionally, HEDIS® contained "process" measures that assessed interventions such as mammograms for older women and retinal eye exams for people with diabetes. While evidence in the scientific literature tied the measured processes or interventions to favorable patient outcomes, there was a desire to develop an outcomes measure that captured performance across multiple aspects of care.

The CMS, NCQA, Health Assessment Lab (HAL), and Performance Measurement experts worked together to develop a measure that would assess the physical functioning and mental well being of Medicare beneficiaries over time. It was decided that this measure should include a set of survey questions known as the SF-36®. The SF-36® was developed as part of the Medical Outcomes Study, a national research effort, and has a long history of use in estimating relative disease burden for numerous conditions.[2] The survey is referenced in the literature in connection with over 150 diseases and conditions including arthritis, back pain, depression, diabetes and hypertension.[3] Additional items were included in HOS in addition to the SF-36® survey to allow

[1] HEDIS® is a registered trademark of the National Committee for Quality Assurance.
[2] Tarlov AR, Ware JE, Greenfield S, Nelson EC, Perrin E, Zubkoff M. The Medical Outcomes Study: an application of methods for monitoring the results of medical care. *Journal of the American Medical Association.* 1989; 262:925-930.
[3] QualityMetric. *Search Bibliography*. www.sf-36.com/cgi-bin/bibsearch.cgi. December 5, 2000.

for case mix adjustment, which is essential for meaningful and valid plan to plan comparisons of health outcomes.

The HOS measure was approved for inclusion in HEDIS® 3.0 by the Committee on Performance Measurement (CPM), the NCQA panel that oversees the development and evolution of HEDIS®. The CMS has contracted with Health Assessment Lab, Health Economics Research (HER), Health Services Advisory Group (HSAG), National Committee for Quality Assurance, and QualityMetric (QM) to implement and operationalize all aspects of the HOS measure.

In 1998, CMS required Medicare MCOs with contracts in effect on or before January 1, 1997 to participate in HOS. Some Medicare MCOs were required to report by market areas, geographic areas containing more than 5,000 members that generally are served by distinctly separate networks of service providers (referred to as "contract markets"). In 1999, CMS required all Medicare + Choice Organizations (M+COs) and section 1876 risk and cost health plans with contracts in place on or before January 1, 1998 to participate in HOS. In addition, selected PACE plans, EverCare plans and demonstration risk plans participated in the second year administration. A Spanish language version of the survey was also incorporated into the survey protocol. In 2000, CMS required all M+COs, continuing cost contractors, PACE plans, Social HMOs, Medicare Choices and Department of Defense (DOD) Subvention Demonstration plans with contracts in place on or before January 1, 1999 to participate in the *Cohort III Baseline* survey. All plans with contracts in place on or before January 1, 1997 that participated in the *Cohort I Baseline* survey in 1998 were required to participate in the *Cohort I Follow Up* survey in 2000. In 2001, CMS required all M+COs, continuing cost contractors, PACE plans, Social HMOs, Medicare Choices and Department of Defense (DOD) Subvention Demonstration plans with contracts in place on or before January 1, 2000 to participate in the *Cohort IV Baseline* survey.

The Medicare HOS Information and Technical Support Telephone Line (1-888-880-0077), as well as the HOS e-mail address (*azpro.hos@sdps.org*), are available to provide assistance with report questions and interpretation.

MEDICARE HEALTH OUTCOMES SURVEY TIMELINE

HOS survey data are collected annually for a new sample of members (cohort), with a two-year follow up for each baseline cohort. The HOS 2001 survey administration was the second year of parallel data collection on two separate samples for M+COs (*Cohort IV Baseline* and *Cohort II Follow Up*). Timelines for the sampling protocol are described in the table below[4]:

	ROUND I (1998)	ROUND II (1999)	ROUND III (2000)	ROUND IV (2001)	ROUND V (2002)
COHORT I	CI Baseline		CI Follow Up		
COHORT II		CII Baseline		CII Follow Up	
COHORT III			CIII Baseline		CIII Follow Up
COHORT IV				CIV Baseline	
COHORT V					CV Baseline

[4] National Committee for Quality Assurance. *HEDIS® 2001, Volume 6: Specifications for the Medicare Health Outcomes Survey*. Washington D.C.: NCQA Publication, 2001.

SF-36® HEALTH SURVEY

The Medicare HOS has incorporated the SF-36®, a multipurpose, short-form health survey with only 36 questions. The SF-36® yields an eight scale profile of scores as well as physical and mental health summary measures. It is a generic measure, as opposed to one that targets a specific age, disease, or treatment group. As documented in more than 2,500 publications, the SF-36® has proven useful in both general and specific populations, comparing the relative burden of diseases, differentiating the health benefits produced by a wide range of different treatments, and screening individual patients. The most complete information about the history and development of the SF-36®, its psychometric evaluation, studies of reliability and validity, and normative data is available in two user's manuals.[5, 6]

The SF-36® asks respondents about their usual activities and how they would rate their health. It is a barometer of physical and mental health functional status. Concepts (scales) included in the SF-36® are:

- Physical Functioning (PF) – These ten questions ask respondents to indicate the extent to which their health limits them in performing physical activities.
- Role-Physical (RP) – These four questions assess whether respondents' physical health limits them in the kind of work or other usual activities they perform, both in terms of time and performance.
- Role-Emotional (RE) – These three questions assess whether emotional problems have caused respondents to accomplish less in their work or other usual activities, both in terms of time and performance.
- Bodily Pain (BP) – These two questions determine the respondents' frequency of pain and the extent to which it interferes with their normal activities.
- Social Functioning (SF) – These two questions ask respondents to indicate limitations in social function due specifically to health.
- Mental Health (MH) – These five questions ask respondents how frequently they experience feelings representing four major mental health dimensions: anxiety, depression, loss of behavioral/emotional control and psychological well being.
- Vitality (VT) – These four questions ask respondents to rate their well being by indicating how frequently they experience energy and fatigue.
- General Health (GH) – These five questions ask respondents to rate their current health status overall, susceptibility to illness, and their expectations for health in the future.

Figure B1 illustrates the taxonomy of items and concepts underlying the construction of the SF-36® scales and summary measures. The taxonomy has three levels: (1) items; (2) eight scales that aggregate 2-10 items each; and (3) two summary measures that aggregate scales. All but one of the 36 items (self-reported health transition) are used to score the eight SF-36® scales. Each item is used in scoring only one scale. The eight scales form two distinct higher-ordered clusters (principal components) that are the basis for scoring the physical (PCS) and mental (MCS)

[5] Ware JE, Snow KK, Kosinski M, Gandek B. *SF-36® Health Survey Manual and Interpretation Guide.* Boston, MA: The Health Institute, 1993.
[6] Ware JE, Kosinski M. *SF-36® Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: QualityMetric, Incorporated, 2001.

component summary measures. These components account for 80-85% of the reliable variance in the eight scales in the US general population and in other countries, in both cross-sectional and longitudinal studies.[7, 8] This discovery made it possible to reduce the number of statistical comparisons involved in analyzing the SF-36® (from eight to two) without substantial loss of information.[9, 10]

The reliability of the two summary measures has been estimated using both internal consistency and test-retest methods. With rare exceptions, reliability estimates for physical and mental summary scores usually exceed 0.90.[11] These trends in reliability coefficients for the summary measures have also been replicated for the elderly and across other groups differing in socio-demographic characteristics and diagnoses.[12] While studies of subgroups indicate slight declines in reliability for more disadvantaged respondents, reliability coefficients consistently exceeded recommended standards for group level analysis.

Studies of validity generally support the intended meaning of high and low SF-36® scores as documented in the original user's manuals.[5, 10] Because of the widespread use of the SF-36® across a variety of applications, evidence from many types of validity research is relevant to these interpretations. Studies to date have yielded content, concurrent, criterion, construct, and predictive evidence of validity. The content validity of the SF-36® has been compared to that of other widely used generic health surveys.[5, 10] Systematic comparisons indicate that the SF-36® includes eight of the most frequently measured health concepts. Among the content areas included in widely used surveys, but not included in the SF-36®, are: sleep adequacy, cognitive functioning, sexual functioning, health distress, family functioning, self-esteem, eating, recreation/hobbies, communication, and symptoms/problems that are specific to one condition. The latter are not included in the SF-36® because it is a generic measure.

The SF-36® is scored from 0 to 100 points, with higher scores indicating better functioning on both the individual scales and summary measures (PCS and MCS). The HOS individual scale scores, as well as the PCS and MCS scores, have been normed to the values for the 1998 general US population, so that a score of fifty represents the national average for a given scale or summary score. In addition, the norm based score for the 1998 general US population has a standard deviation (SD) of ten points. It is important to note however, that the 1998 general population elderly norms reflect a PCS mean score of 42.6 and an MCS mean score of 52.0.

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[7] Ware JE, Snow KK, Kosinski M, Gandek, B. *SF-36® Physical and Mental Health Summary Scales: A User's Manual.* Boston, MA: The Health Institute, 1993.

[8] Gandek B, Ware JE, Aaronson NK, Alonso J, Apolone G, Bjorner J, *et al.* Tests of data quality, scaling assumptions and reliability of SF-36® in eleven countries: Results from the IQOLA Project. *J Clin Epidemiol* 1998; 51:1149-1158.

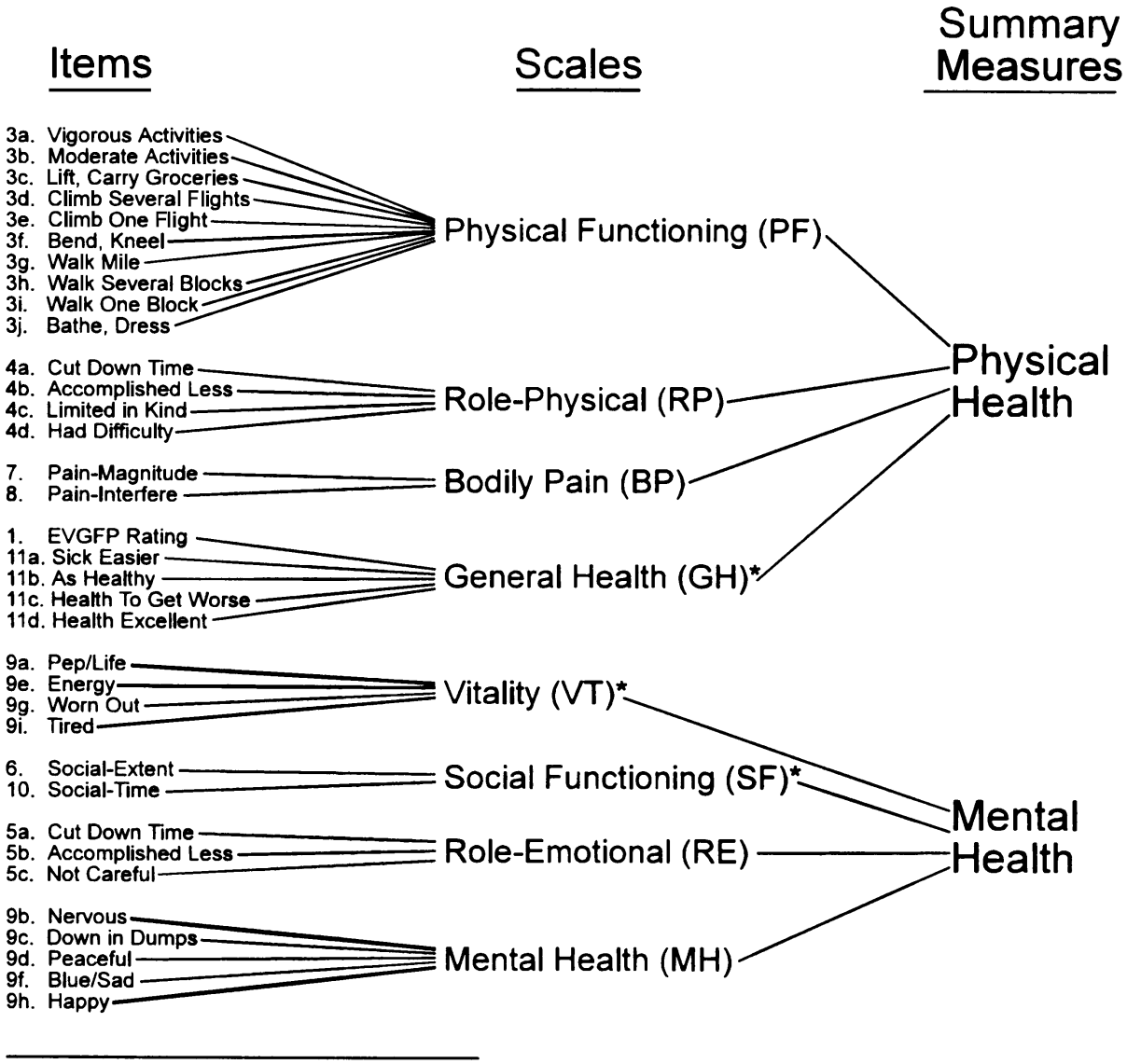
[9] Ware JE, Kosinski M, Bayliss MS, McHorney CA, Rogers WH, Raczek A. Comparison of methods for the scoring and statistical analysis of SF-36® health profiles and summary measures: summary of results from the Medical Outcomes Study. *Med Care* 1995; 33: AS264-AS279.

[10] Ware JE, Kosinski M. *SF-36® Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: QualityMetric, Incorporated, 2001.

[11] http://www.sf-36.com/cgi-bin/bibsearch.cgi

[12] Ware JE, Kosinski M, Keller SK. *SF-36® Physical and Mental Health Summary Scales: A User's Manual.* Boston, MA: The Health Institute, 1994.

FIGURE B1: SF-36® MEASUREMENT MODEL



Source: Ware JE, Kosinski M, and Keller SD. *SF-36® Physical and Mental Health Summary Scales: A User's Manual*. Boston, MA: The Health Institute, 1994.

METHODOLOGY AND DESIGN

Sampling Methodology

The HOS measure is administered to a randomly selected sample of individuals at baseline from each M+CO. The sampling methodology is dependent upon the plan's population. For M+COs with Medicare populations of more than 1,000 members, a simple random sample of 1,000 members is selected for the baseline survey. In those M+COs with 2,000 or more members, members who responded to the *Cohort III Baseline* survey were excluded from the *Cohort IV Baseline* sample. For M+COs with populations of 1,000 members or less, all eligible members were included in the sample for the subsequent baseline survey. Members were defined as eligible if they were continuously enrolled for at least 6 months and did not have End Stage Renal Disease (ESRD).

Data Collection

M+COs must contract with an NCQA-certified HOS vendor to administer the survey. Vendors follow the protocol contained in *HEDIS®, Volume 6: Specifications for the Medicare Health Outcomes Survey*.[13] The standard HEDIS® protocol for administering the HOS employs a combination of mail and telephone survey administration. The mail component of the survey uses a standardized questionnaire, survey letters, and prenotification and reminder/thank you postcards. Vendors review each returned mail questionnaire for legibility and completeness. If a beneficiary's responses are ambiguous, then a coding specialist employs standardized decision rules. Questionnaires can be entered into a computer manually or optically scanned into a computer readable file. For manually entered data, two separate data entry specialists must key enter responses from each questionnaire.

In those instances when beneficiaries fail to respond after the second mail survey, vendors attempt telephone follow up (with a maximum of six attempts). Vendors also perform telephone follow up for members who return an incomplete mail survey in order to obtain responses to missing questions. Vendors use a standardized version of a Computer Assisted Telephone Interviewing (CATI) script to collect telephone interview data for the survey. To ensure the standardization of the data collection process, vendors are prohibited from augmenting or adjusting the HOS protocol or instrument in any manner.

Periodically during the survey administration, and again when data collection is completed, vendors run an edit program against each record in the data file to identify invalid data elements. At the conclusion of the data collection period, vendors perform preliminary data cleaning and editing and follow up with survey respondents, as necessary. For a more detailed discussion on data sampling, collection and submission, please refer to Volume 6 of HEDIS® 2001 (Section D).

[13] National Committee for Quality Assurance. *HEDIS® 2001, Volume 6: Specifications for the Medicare Health Outcomes Survey*. Washington DC: NCQA Publication, 2001.

Data Cleaning

Data consistency checks are performed by reviewing the entire HOS data set for out of range values. To verify the presence of unique beneficiaries in the HOS data file, the file is examined for duplicate Health Insurance Claim (HIC) numbers. All dates contained within the data file are verified to correspond to the appropriate range. Frequency distributions of all categorical variables as well as cross tabulations by vendor are performed to identify both out of range values and data shifts in value assignment. The cross tabulations are performed using the entire HOS data file and also specified subsets of the data file. In addition to the cross tabulations of categorical variables, the survey variables such as survey disposition, round number, and survey language are assessed for accuracy and consistency.

After the HOS data file is cleaned and edited, additional variables are added to the file. Plan specific variables include number of ineligible beneficiaries, sample size, total number of completed surveys, number completed by mail, number completed by telephone, overall response rate, mail response rate, and telephone response rate. All date variables contained in the data file are converted to SAS date format (elapsed date variables) to facilitate the calculation of duration of enrollment and age, which are then incorporated into the data file. Upon completion of the HOS data editing and cleaning process, the final data set is produced.

Scoring SF-36® Physical and Mental Health Summary Measures

Physical and mental health are estimated, respectively, using the PCS and MCS scoring algorithms recommended by the developers of the SF-36® Health Survey, as documented in detail elsewhere.[14] Briefly, these norm-based algorithms yield favorably scored (i.e., higher is better) scales that have a mean of 50 and a standard deviation of 10 in the general US population. For PCS, very high scores indicate no physical limitations, disabilities or decline in well being, high energy level and a rating of health as "excellent." For MCS, very high scores indicate frequent positive affect, absence of psychological distress and no limitations in usual social and role activities due to emotional problems.

So that population norms would be current, in relation to the timing of the first HOS cohort survey, the means and standard deviations used in scoring PCS and MCS came from the 1998 National Survey of Functional Health Status. So that PCS and MCS scores would have the same interpretation in the HOS as in previous studies, the weights (i.e., component scoring coefficients) used in aggregating the eight scales to score each of those summaries are the original standardized weights recommended by the developers.[15] These weights, which have been used in more than 100 published studies reporting results for the PCS and MCS summary measures, have consistently yielded reliable and valid scores in both general and elderly

[14] Ware JE, Kosinski M. *SF-36® Physical and Mental Health Summary Scales: A Manual for Users of Version 1, Second Edition*. Lincoln, RI: QualityMetric, 2001.
[15] Ware JE, Kosinski M. *SF-36® Physical and Mental Health Summary Scales: A User's Manual*. Lincoln, RI: QualityMetric, 2001.

populations. Given this consistency and reliability, the published interpretation guidelines are applicable to the HOS.

The HOS is among the first large scale surveys to take advantage of improved algorithms for scoring the PCS and MCS summary measures for respondents with missing data. The improved algorithms were adopted because about 20% of HOS *Cohort I* respondents had one or more missing SF-36® responses. Most previous studies have used the "half scale" rule for imputing scale scores for those with missing data. This solution, which was developed during the Health Insurance Experiment more than 20 years ago, is widely used in health status research.[16] However, the "half scale" approach has several disadvantages, including: being applicable only to those with at least half of the items answered for each of the eight scales; introducing a bias in score estimates because answered items are simply averaged in estimating missing items; and failing to provide an estimation strategy for PCS and MCS for those with a missing scale score.

The improved scoring algorithms use the missing data estimation (MDE) utility. The MDE scoring utility, which was validated using item response theory, calculates an unbiased score as long as at least one item is answered within each scale. Further, the MDE software uses regression methods to score PCS and MCS for those with one scale missing. As documented elsewhere, the MDE scoring algorithms have been evaluated in the 1998 general US population and in the HOS.[17] In the HOS *Cohort IV Baseline* sample, the MDE software calculated summary scores for an additional 5,047 (2.6%) study participants. These scores would have previously been lost due to missing data. *Please note, the MDE scoring utility does not output scale level results; therefore, scale scores were not included in this report.*

Data Analysis

Of the 171,870 eligible seniors sampled, 118,276 had a calculatable PCS and/or MCS score. Linear regression techniques were used to case mix adjust these scores for each beneficiary. In brief, models used to adjust PCS and MCS scores included variables to control for differences in demographic and socioeconomic characteristics, chronic medical conditions, and HOS study design variables. Demographic and socioeconomic variables included age, gender, race, education, marital status, and income. Chronic medical conditions were measured with a checklist of 13 medical conditions. HOS study design variables include who completed the survey, the mode of survey administration, CMS region, and the survey vendor. The case mix adjustment of PCS and MCS scores was limited to those beneficiaries with complete data for all covariates included in the model. Table B1 describes the covariates used in the case mix adjustment of the SF-36® measures.

[16] Ware JE, Brook RH, Davies-Avery A, Williams K, Stewart AL, Rogers WH, *et al. Model of Health and Methodology*. Santa Monica, CA: RAND Corporation, 1980; R-1987/1-HEW. (*Conceptualization and Measurement of Health for Adults in the Health Insurance Study; vol. 1*).

[17] Kosinski MK, Bayliss M, Bjorner JB, Ware JE. Improving Estimates of SF-36® Health Survey Scores for Respondents in Missing Data. *Medical Outcomes Trust Monitor*, Fall 2000; 5 (1): 8-10.

TABLE B1

COVARIATES USED IN THE CASE MIX ADJUSTMENT OF SF-36® SUMMARY MEASURES

DEMOGRAPHICS	➢ Age (Continuous) ➢ Gender (Male or Female) ➢ Race (White, Black, Other Minority) ➢ Education ➢ Marital Status ➢ Income
CHRONIC MEDICAL CONDITIONS	➢ Hypertension or high blood pressure ➢ Angina pectoris or coronary artery disease ➢ Congestive heart failure ➢ Myocardial infarction or heart attack ➢ Other heart conditions, such as problems with heart valves or arrhythmias ➢ Stroke ➢ Emphysema, or asthma, or COPD (Chronic Obstructive Pulmonary Disease) ➢ Crohn's disease, ulcerative colitis, or inflammatory bowel disease ➢ Arthritis of the hip or knee ➢ Arthritis of the hand or wrist ➢ Sciatica ➢ Diabetes, high blood sugar, or sugar in the urine ➢ Any cancer (other than skin cancer)
HOS STUDY DESIGN VARIABLES	➢ Who Completed Survey (Self or Other) ➢ Mode of Survey Administration (Mail or Telephone) ➢ CMS Plan Region ➢ Survey Vendor

Definitions of Key Terms

ACTIVITIES OF DAILY LIVING (ADLS)	Activities of daily living are the everyday activities involved in personal care such as feeding, dressing, bathing, getting in or out of chairs, toileting, and walking. Physical or mental disabilities can restrict a person's ability to perform personal ADLs.
ANALYTIC SAMPLE	The analytic sample for the Medicare HOS *Cohort IV Baseline* Report is limited to those seniors (age 65 or over) with a calculatable PCS and/or MCS score.
BENEFICIARY	An individual receiving benefits from the Medicare program
CASE MIX ADJUSTMENT	This is a method which adjusts the resulting data for patient characteristics that are known to be related to systematic biases in the way people respond to survey questions. This is accomplished using linear regression techniques, and assumes that the control variables (covariates) have been measured accurately and that the model is correctly specified and applicable to all cases.
CATI	Computer Assisted Telephone Interviewing
CENTERS FOR MEDICARE & MEDICAID SERVICES (CMS)	The Centers for Medicare & Medicaid Services, formerly the Health Care Financing Administration, is responsible for administering Medicare, Medicaid, and Child Health Insurance Programs.
COHORT	A cohort is a group of people who share a common designation (e.g., "Medicare beneficiaries"), experience, or condition. In terms of HOS, *Cohort I* refers to the group of Medicare managed care beneficiaries first surveyed in 1998.
CPM	NCQA's Committee on Performance Measurement that oversees the development of the HEDIS® measurement set
DATA CLEANING	This is the process by which discrepancies within the data are identified and resolved, including issues related to file structure, record numbers, range, and consistency. Data cleaning for all HOS cohorts is conducted by Health Services Advisory Group, Inc. (HSAG).

DEPRESSION SCREEN	A participant in the Medicare HOS is considered to have a positive depression screen when he or she answers "yes" to *any* of the three depression questions (numbers 38, 39 or 40). Individuals with a positive depression screen may be at risk for depressive disorders. These individuals may experience poor outcomes.
ESRD	End Stage Renal Disease
HAL	Health Assessment Lab 15 Court Square, Suite 400 Boston, MA 02108
HEALTH CARE FINANCING ADMINISTRATION (HCFA)	See the Centers for Medicare & Medicaid Services (CMS)
HEALTH MAINTENANCE ORGANIZATION (HMO)	A health maintenance organization is a prepaid health plan, as defined by Title XIII of the Public Health Service Act and its amendments, which is a separate legal entity and provides comprehensive health maintenance and treatment services on a prepaid basis.
HEDIS®	Health Plan Employer Data and Information Set is the most widely used set of performance measures in the managed care industry, and is developed and maintained by NCQA. Volume 6 of the 2001 HEDIS® Manual is included in this report (section D).
HER	Health Economics Research 1029 Vermont Avenue NW, Suite 850 Washington, DC 20005
HIC NUMBER (HIC#)	Health Insurance Claim Number (usually the Medicare number)
HOS MEASURE	The Medicare Health Outcomes Survey measure is an assessment of a health plan's ability to maintain or improve the physical and mental health functioning of its Medicare beneficiaries over a two-year period of time.
HSAG	Health Services Advisory Group, Inc. 301 E. Bethany Home Rd., Suite B-157 Phoenix, AZ 85012

M+CO	Established in section 4001 of the Balanced Budget Act of 1997 (under Part C of the Medicare Program), a Medicare + Choice Organization is a public or private entity organized and licensed under State law as a risk-bearing entity that is certified by CMS as meeting the Medicare + Choice contract requirements, including: processing the enrollment and disenrollment of beneficiaries within a plan; transmitting information such as enrollment information and encounter data to CMS; submitting marketing materials; providing all Medicare-covered benefits and other benefits covered under the contract in a manner consistent with specified access standards; performing quality assurance; creating and carrying out plan procedures for grievances, organization determinations, and appeals; maintaining necessary records; providing advance directives; establishing procedures related to provider participation; setting medical policies; notifying beneficiaries of any "Conscience Protection" exceptions; disclosing physician incentive plans; receiving payment; reporting financial information; paying user fees; making prompt payments to providers; receiving any sanctions invoked by CMS on any of the organization's plans; and fulfilling other contract requirements as specified in regulation.
MEDICARE HEALTH OUTCOMES SURVEY (HOS)	The Medicare Health Outcomes Survey is the first health outcomes measure for the Medicare population in managed care settings. It was developed in 1997 as the Health of Seniors survey in response to the growing number of Medicare beneficiaries receiving their health care through M+COs. The Medicare HOS assesses an M+CO's ability to maintain or improve the physical and mental health functioning of its Medicare members over time. The survey is administered to a random sample of members from each M+CO at the beginning and end of a two-year period. The HOS results are used to monitor the health of the general population, to evaluate treatment outcomes and procedures, and to provide external performance measurement.
MEDICARE HOS BASELINE REPORT	The Medicare Health Outcomes Survey baseline report is produced and disseminated after each baseline cohort's data is collected and analyzed. Please be advised that the baseline report is not suitable for plan to plan comparisons.

MEDICARE HOS PERFORMANCE MEASUREMENT REPORT	The Medicare Health Outcomes Survey Performance Measurement report is produced and disseminated after the collection of follow up data on each cohort. Performance Measurement results reflect a health plan's ability to maintain or improve the physical and mental health functioning of its Medicare beneficiaries over a two-year period of time. The goals of the HOS Performance Measurement report are to help beneficiaries make informed health care choices and to promote quality improvement based on competition. It is part of a larger effort by CMS to improve the health care industry's capacity to sustain and improve health status and functioning within the senior population.
MENTAL COMPONENT SUMMARY (MCS) SCORE	The Mental Component Summary score is derived from the SF-36® survey, and is a reliable and valid measure of mental health. The measure is highly correlated to the Mental Health (MH), Role-Emotional (RE), and Social Functioning (SF) SF-36® scales.
MISSING DATA ESTIMATION (MDE) SCORING	Missing data estimation is a feature of the SF-36® algorithms used in the calculation of PCS and MCS scores when one or more questionnaire item responses are missing. The scoring utility uses the pattern of responses across completed items to estimate the most likely response to each missing item and it uses all available SF-36® scale scores to estimate PCS and MCS summary scores.
NCQA	National Committee for Quality Assurance 2000 L St, NW, Suite 500 Washington, DC 20036
PERFORMANCE MEASUREMENT RESULTS	The adjusted differences between the HOS baseline and two-year follow up results, which are presented as better, same or worse than expected for PCS and MCS
PHYSICAL COMPONENT SUMMARY (PCS) SCORE	The Physical Component Summary score is derived from the SF-36® survey, and is a reliable and valid measure of physical health. The measure is highly correlated to the Physical Functioning (PF), Role-Physical (RP), and Bodily Pain (BP) SF-36® scales.
PROXY	An individual who completed a survey on behalf of the beneficiary

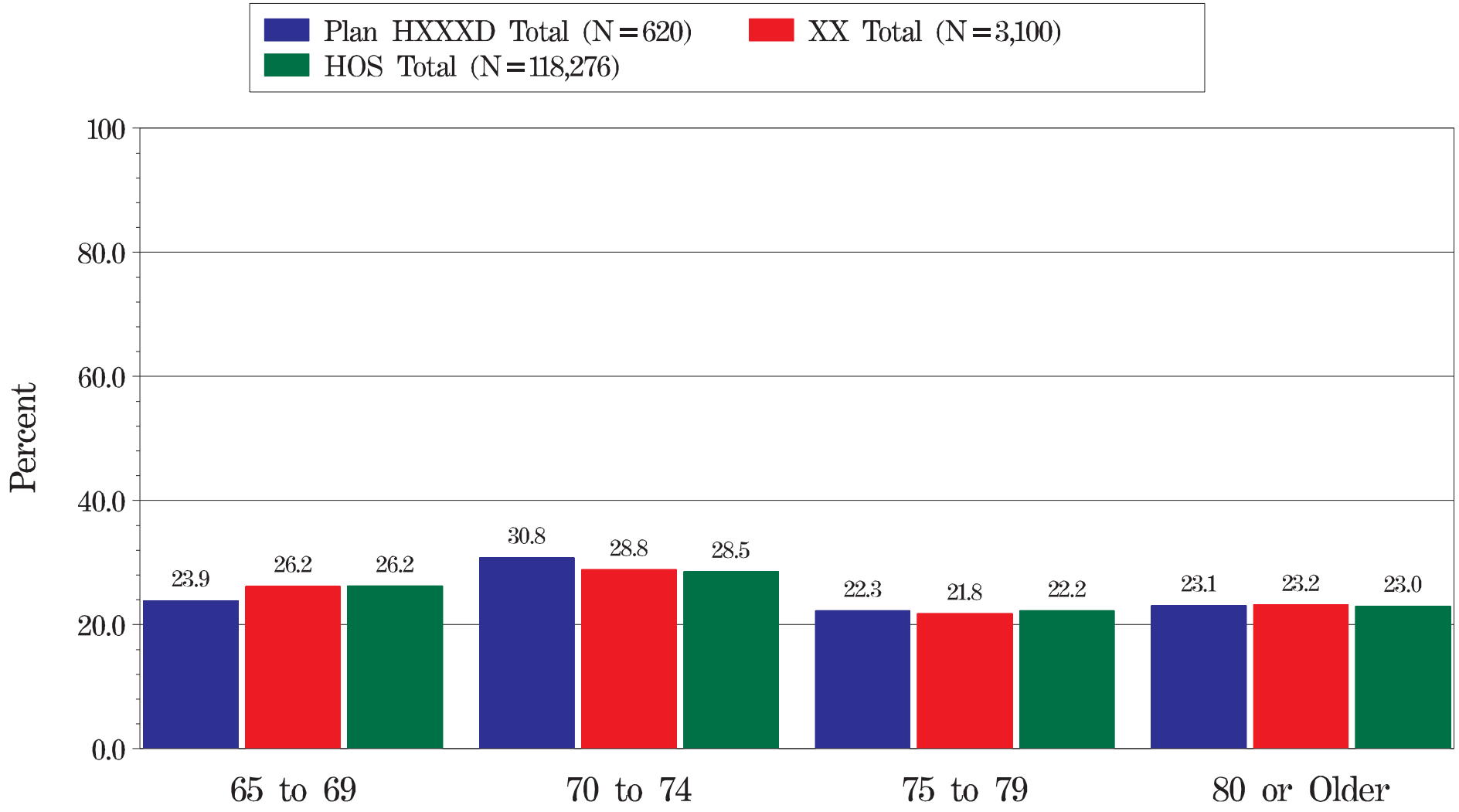
QIO	Quality Improvement Organization, formerly referred to as Peer Review Organization (PRO)
QM	QualityMetric, Incorporated 640 George Washington Highway Lincoln, RI 02865
RESPONSE RATE	The Medicare HOS response rate is the number of beneficiaries who have a PCS and/or MCS score, divided by the number of eligible beneficiaries sampled.
RISK ADJUSTMENT	This is a method which adjusts for multiple factors which may impact the outcome of interest. This is accomplished using regression models, and assumes that the control variables (covariates) have been measured accurately and that the models are correctly specified and applicable to all cases.
SAS	A software package for statistical analysis
SF-36®	36-Item Short-Form Health Survey
TECHNICAL EXPERT PANEL (TEP)	The Medicare HOS Technical Expert Panel (convened by NCQA) oversees the continued development of the Medicare HOS measure, and is comprised of individuals with specific expertise in the health care industry and outcomes measurement.
VENDOR	Independent survey organization that is trained and certified by NCQA to administer the HOS Survey

CD-ROM

The accompanying CD includes all of the information from the Executive Summary, Overview, and Definitions of Key Terms sections contained in the Medicare Health Outcomes Survey *Cohort IV Baseline* Report. Additionally, the CD contains supplementary graphical depictions of plan level results. The graphs outlined in sections 1 and 2 below examine the *Cohort IV Baseline analytic sample* (118,276) with an emphasis on demographics and health status indicators. The graphs in section 3 examine the *Cohort IV Baseline eligible sample* of seniors (171,870) with an emphasis on non-respondent information. Please note, the contents are in the form of an Adobe Acrobat portable document file (.pdf). A free Adobe Acrobat Reader can be downloaded from Adobe's website (*www.adobe.com*).

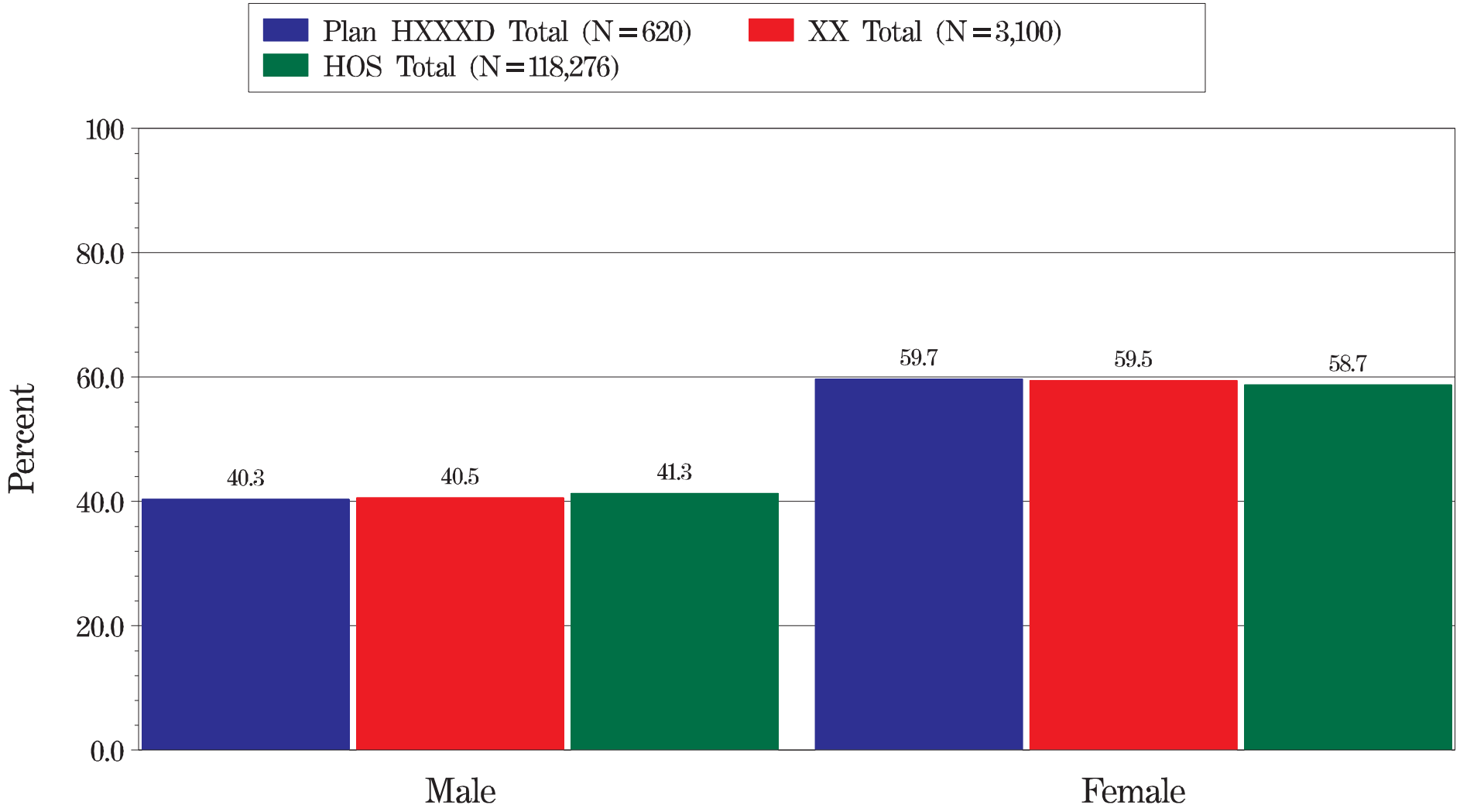
Supplemental Figures

Figure 1: Percent Distribution of Age Group for Plan HXXXD, XX Total, and HOS Total



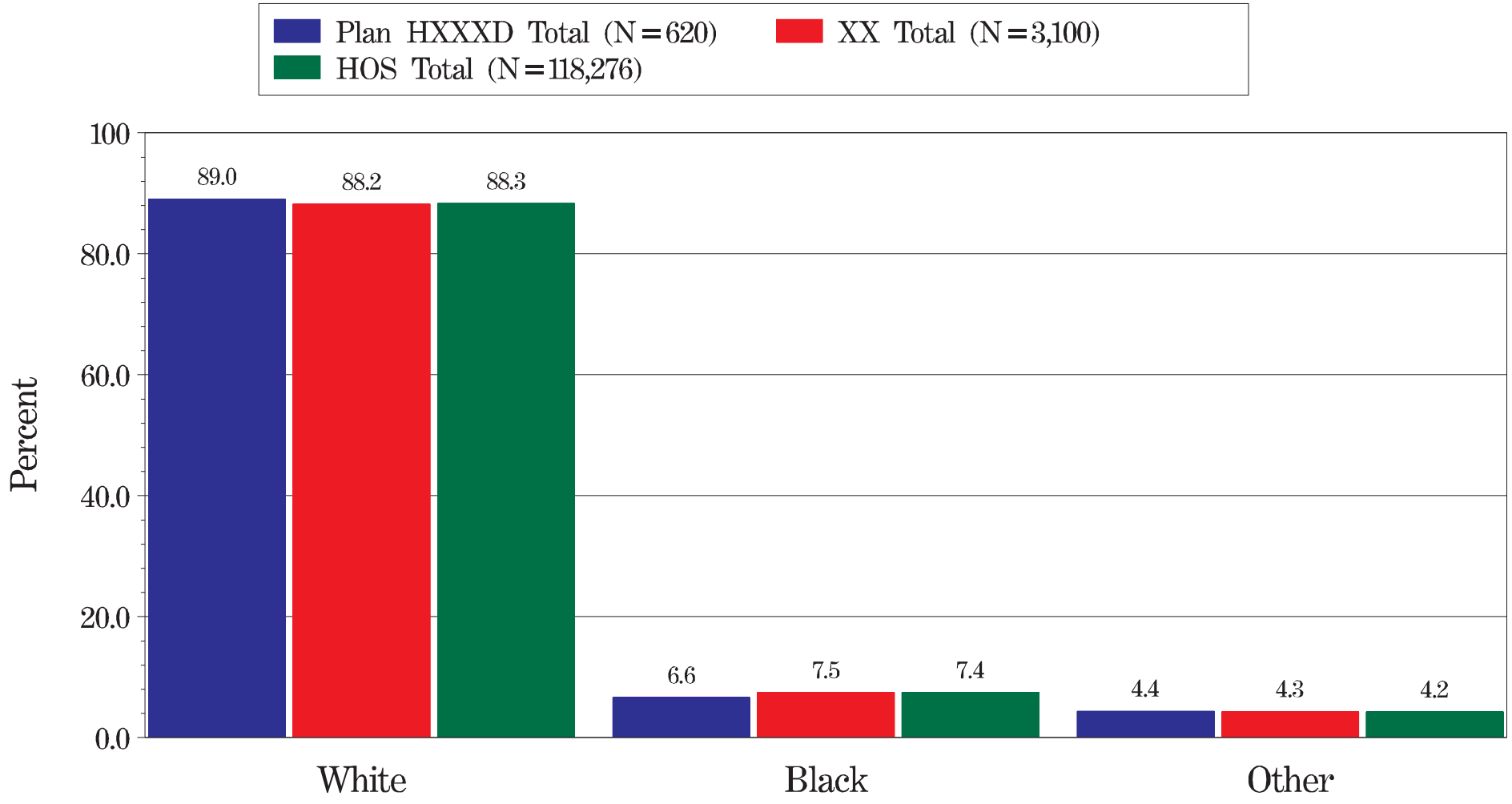
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 2: Percent Distribution of Gender for Plan HXXXD, XX Total, and HOS Total



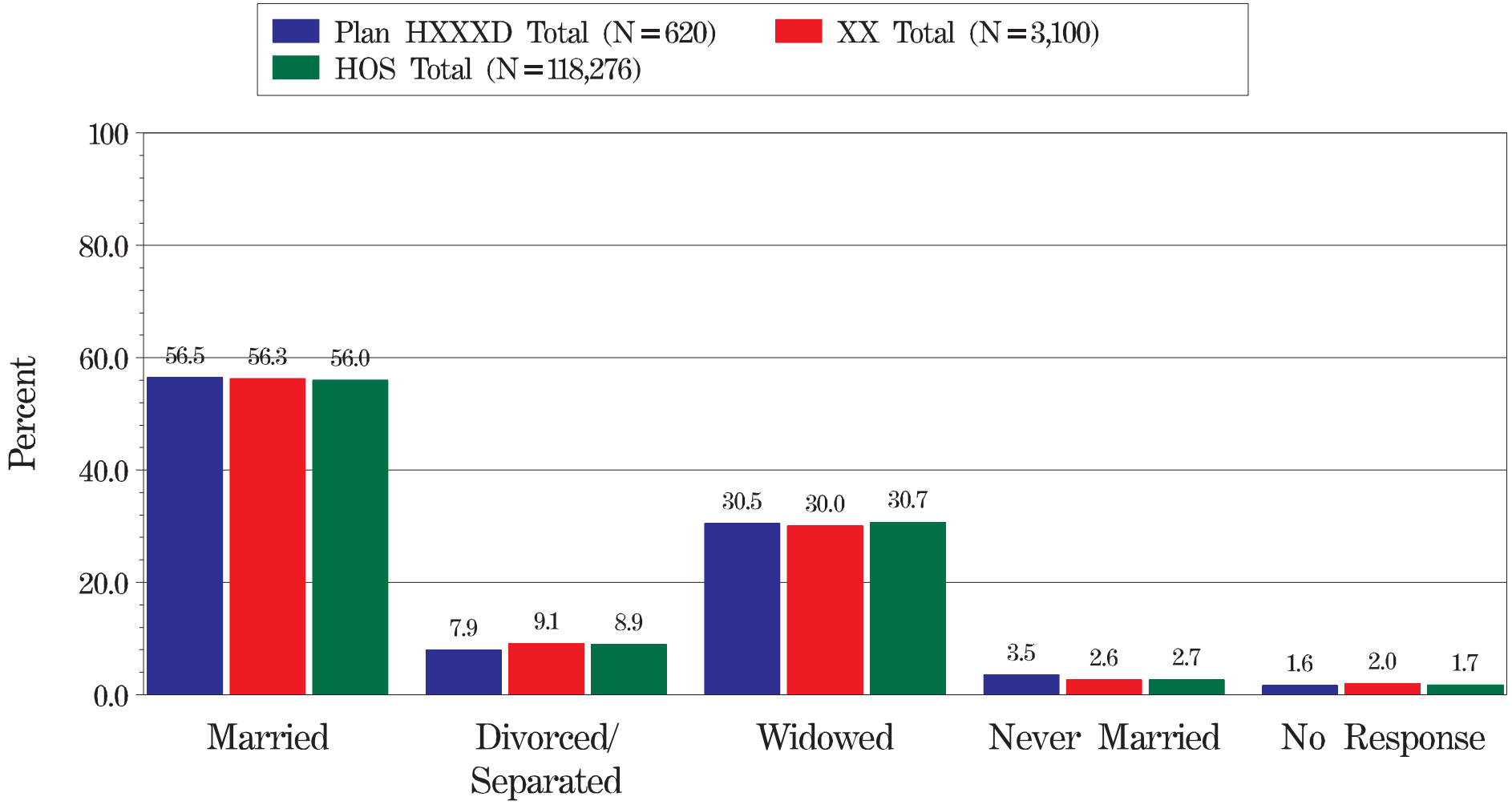
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 3: Percent Distribution of Race for Plan HXXXD, XX Total, and HOS Total



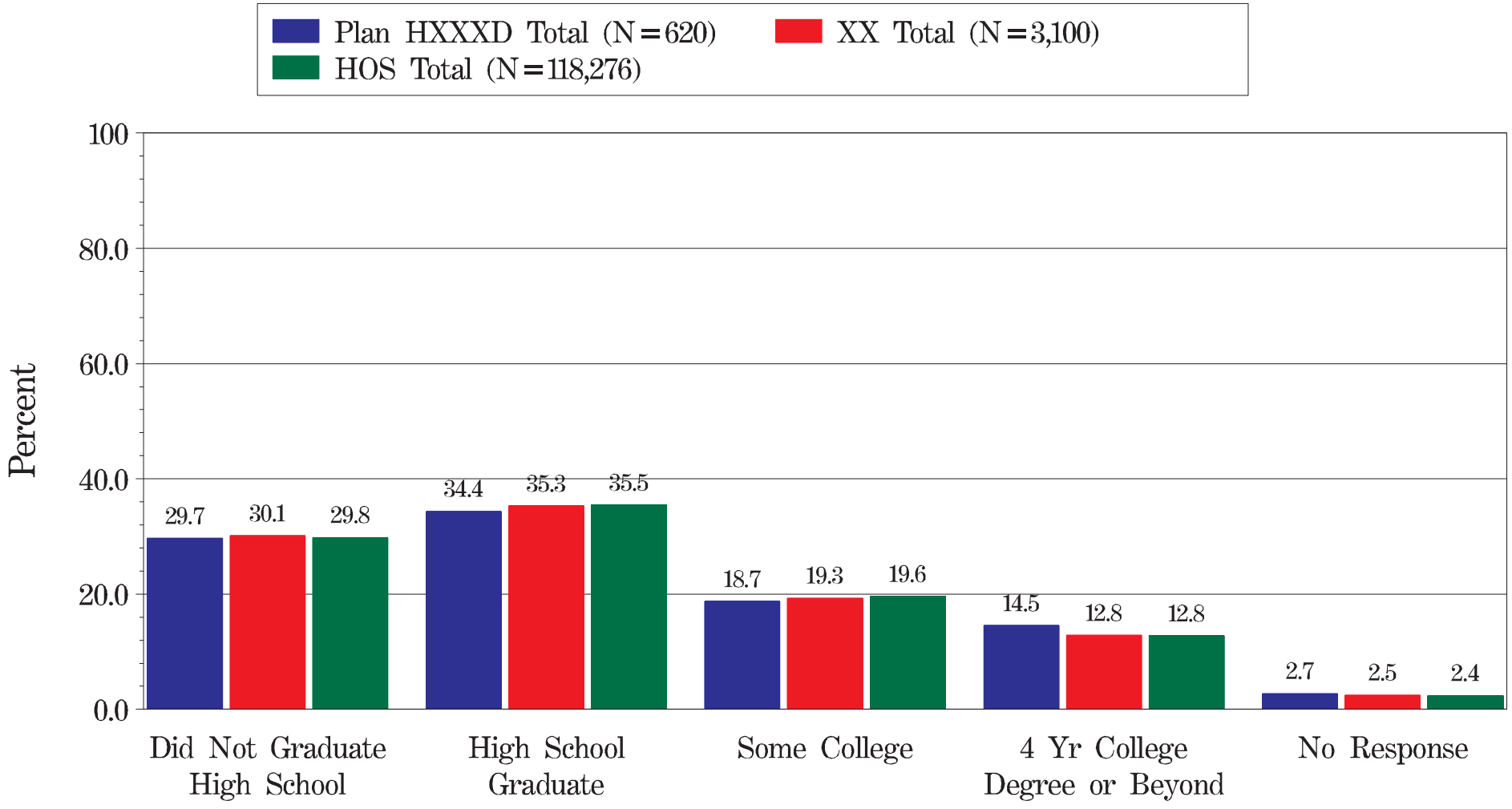
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
A very small percentage of the "Other" category can be attributed to beneficiaries being coded as "Unknown."
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 4: Percent Distribution of Marital Status for Plan HXXXD, XX Total, and HOS Total



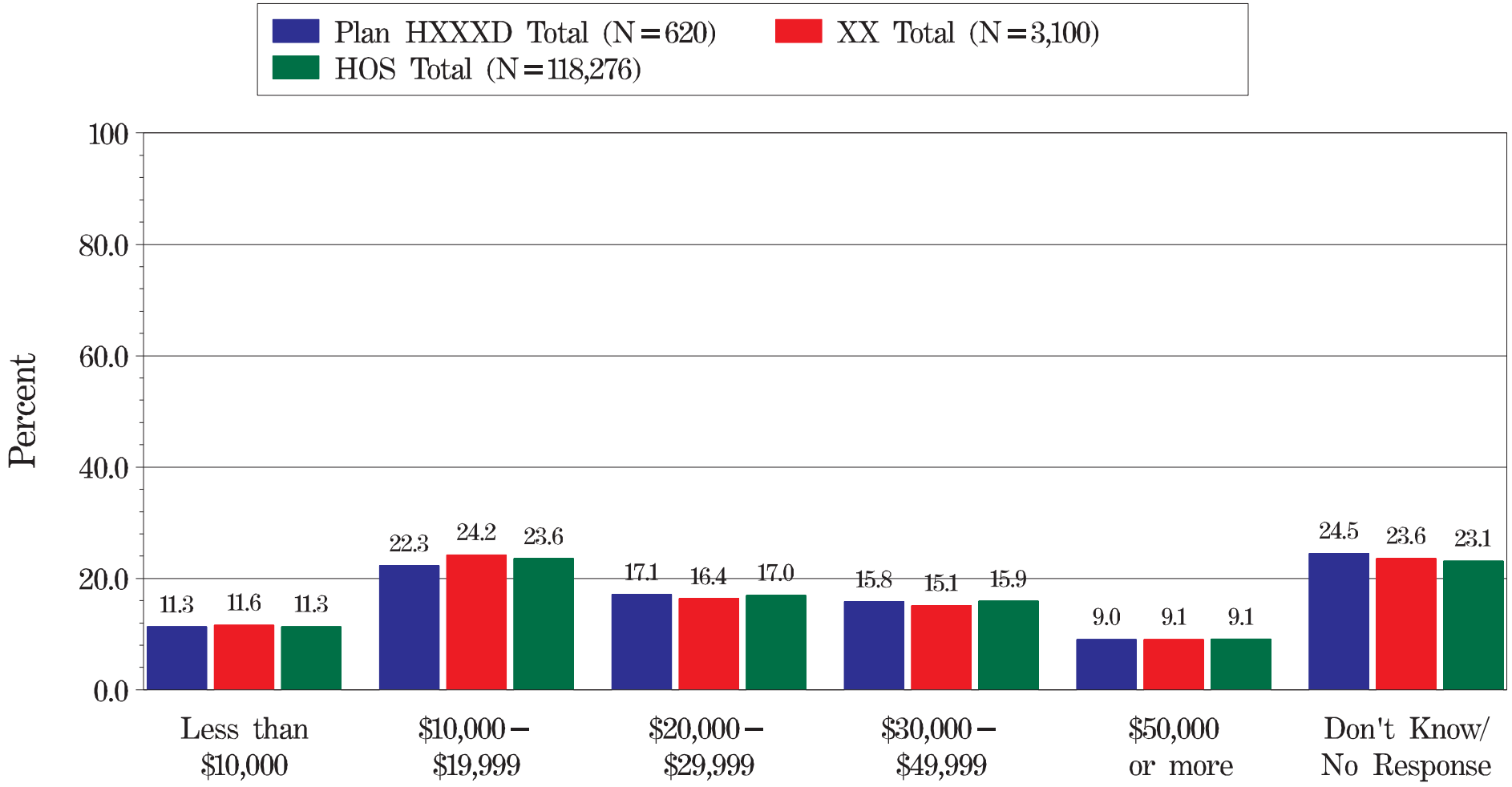
Data Source: Medicare Health Outcomes Survey Response
Responses to question #50: "What is your current marital status?"
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 5: Percent Distribution of Education for Plan HXXXD, XX Total, and HOS Total



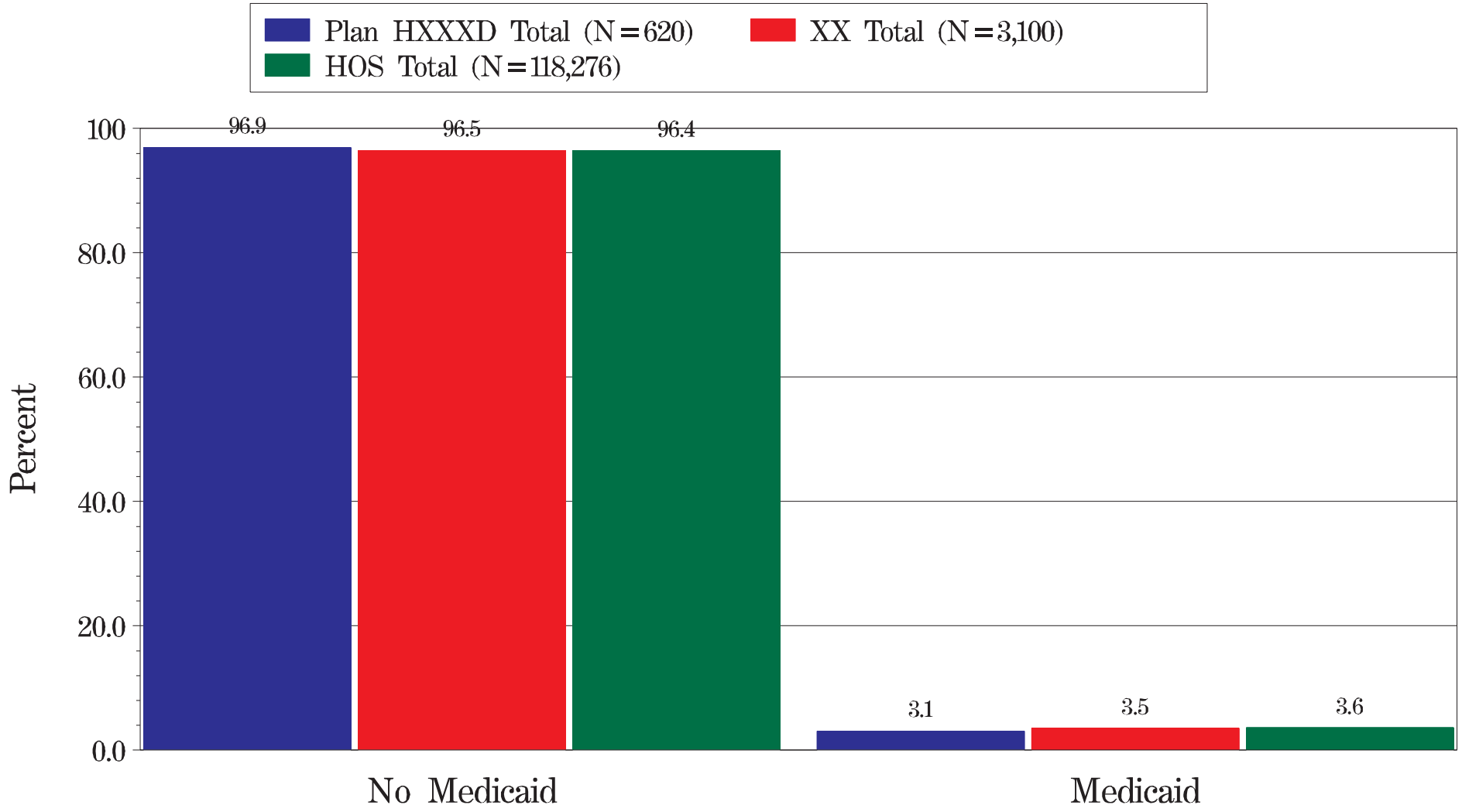
Data Source: Medicare Health Outcomes Survey Response
Responses to question #51: "What is the highest grade or level of school that you have completed?"
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 6: Percent Distribution of Household Income for Plan HXXXD, XX Total, and HOS Total



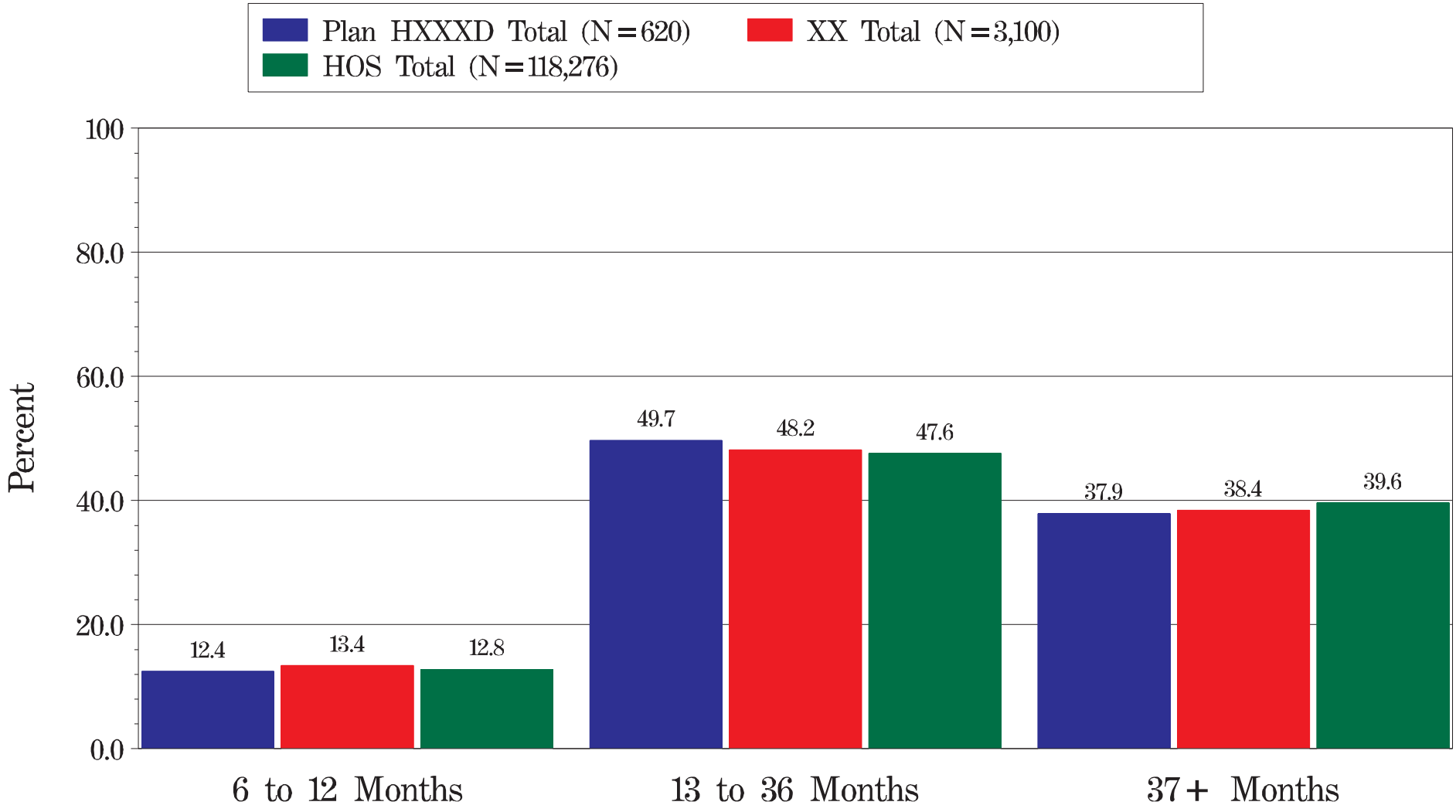
Data Source: Medicare Health Outcomes Survey Response
Responses to question #57: "Which of the following categories best represents the combined income for all family members in your household for the past 12 months?"
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 7: Percent Distribution of Medicaid Status for Plan HXXXD, XX Total, and HOS Total



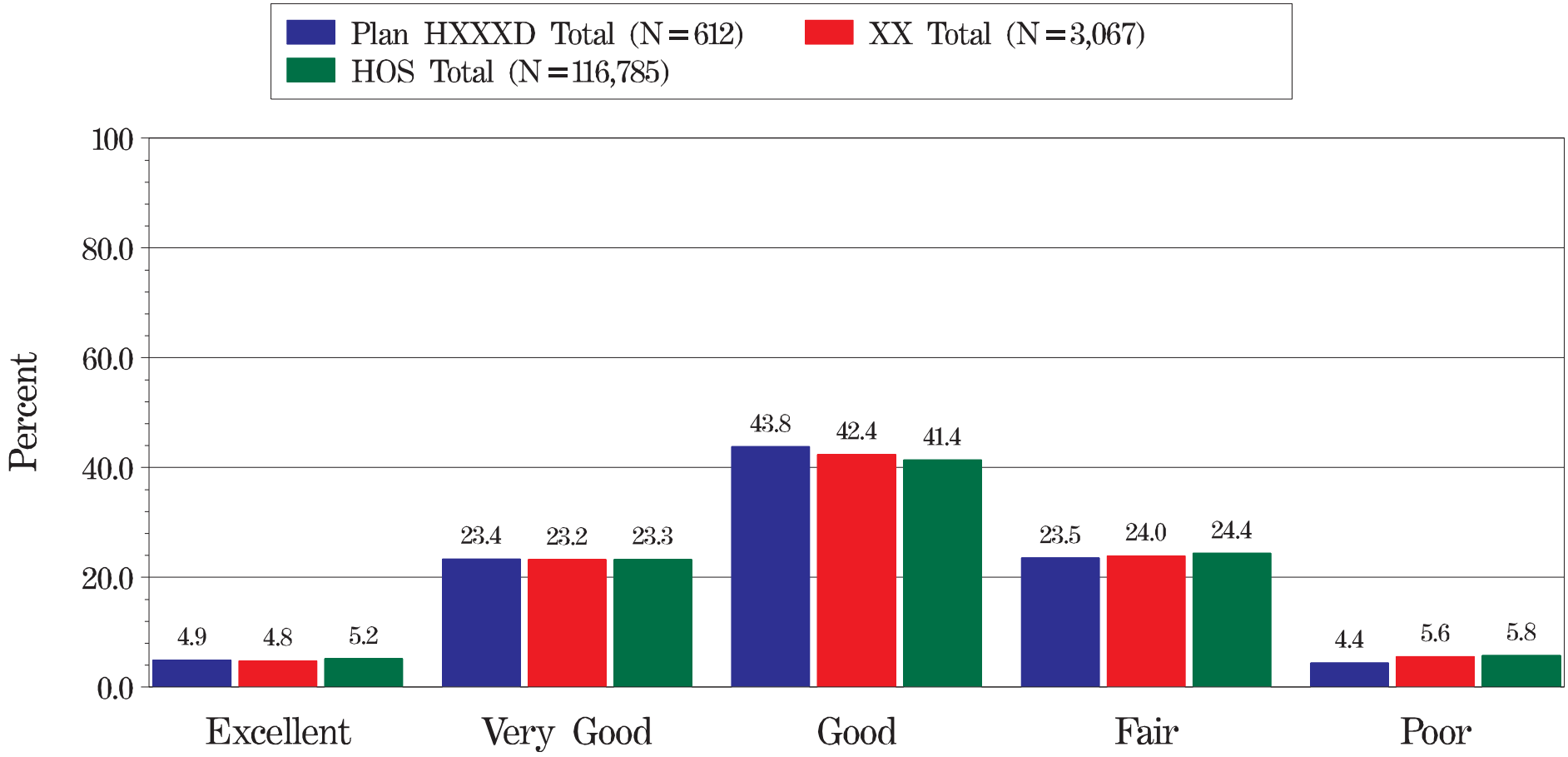
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 8: Percent Distribution of Enrollment Duration for Plan HXXXD, XX Total, and HOS Total



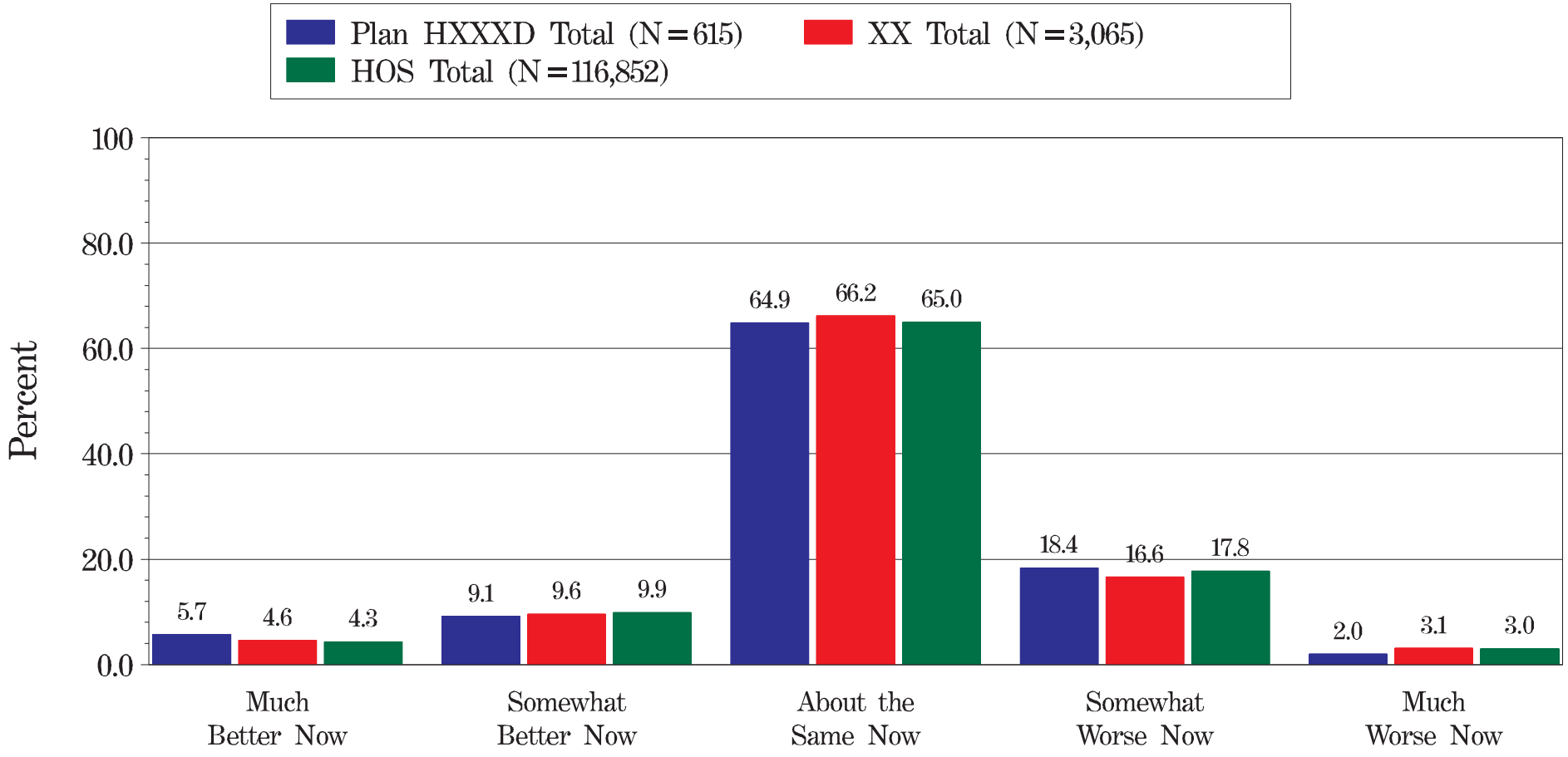
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 9: General Health Question for Plan HXXXD, XX Total, and HOS Total



Data Source: Medicare Health Outcomes Survey Response
Responses to question #1: "In general, how would you say your health is:"
Individuals responding "Fair" or "Poor" are known to be at increased risk for near future hospitalization (i.e. within 6 months), use of mental health services, and/or mortality in five years. (Ware JE, Kosinski M, Keller SK. SF-36 Physical and Mental Health Summary Scales: A User's Manual. Boston, MA: The Health Institute, 1994.)
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 10: Health Transition Question for Plan HXXXD, XX Total, and HOS Total



Data Source: Medicare Health Outcomes Survey Response

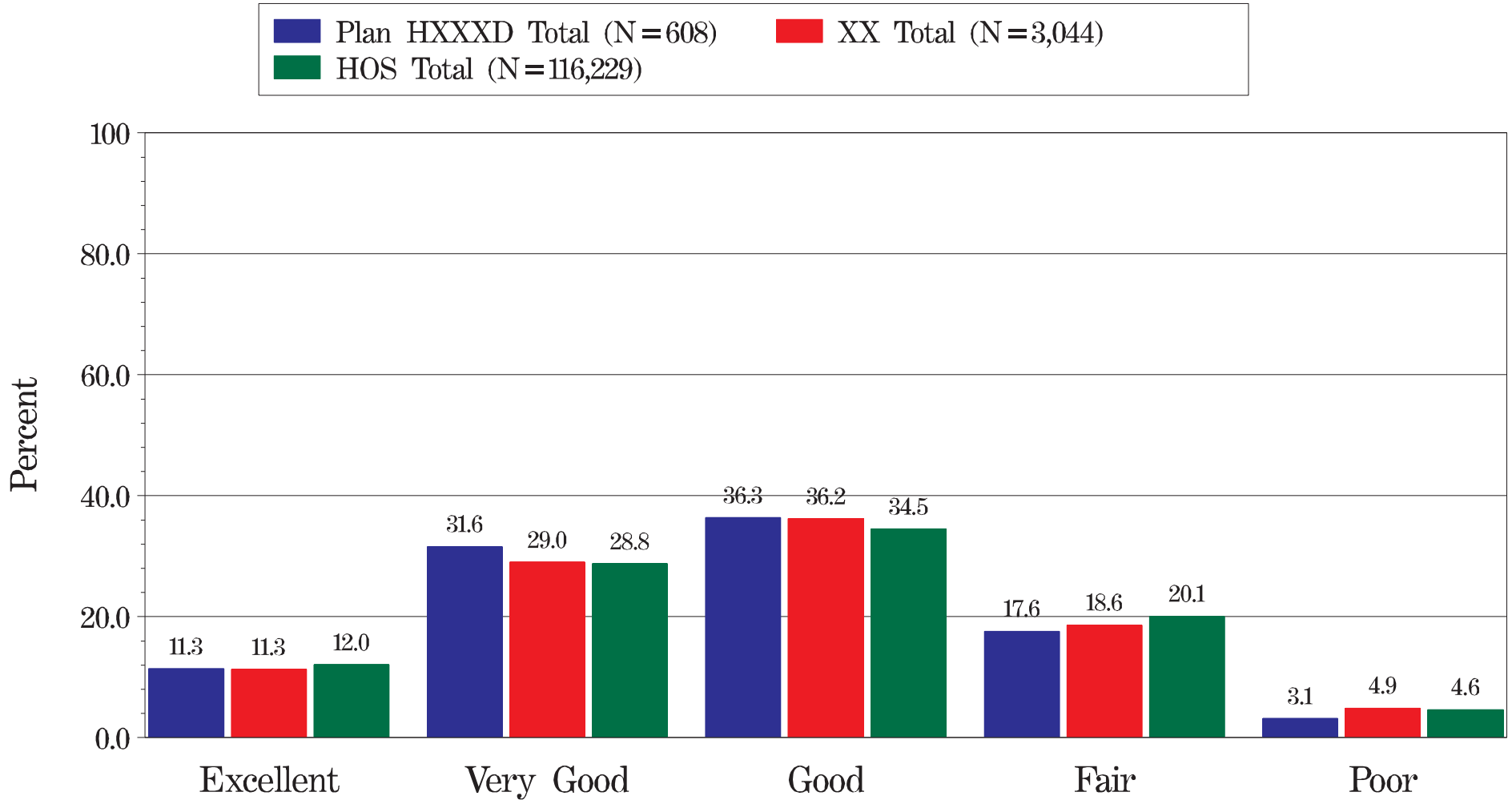
Responses to question #2: "Compared to one year ago, how would you rate your health in general now?"

Individuals responding "Somewhat Worse Now" or "Much Worse Now" are known to be at increased risk for near future hospitalization (i.e. within 6 months), use of mental health services, and/or mortality in five years. (Ware JE, Kosinski M, Keller SK. SF−36 Physical and Mental Health Summary Scales: A User's Manual. Boston, MA: The Health Institute, 1994.)

Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.

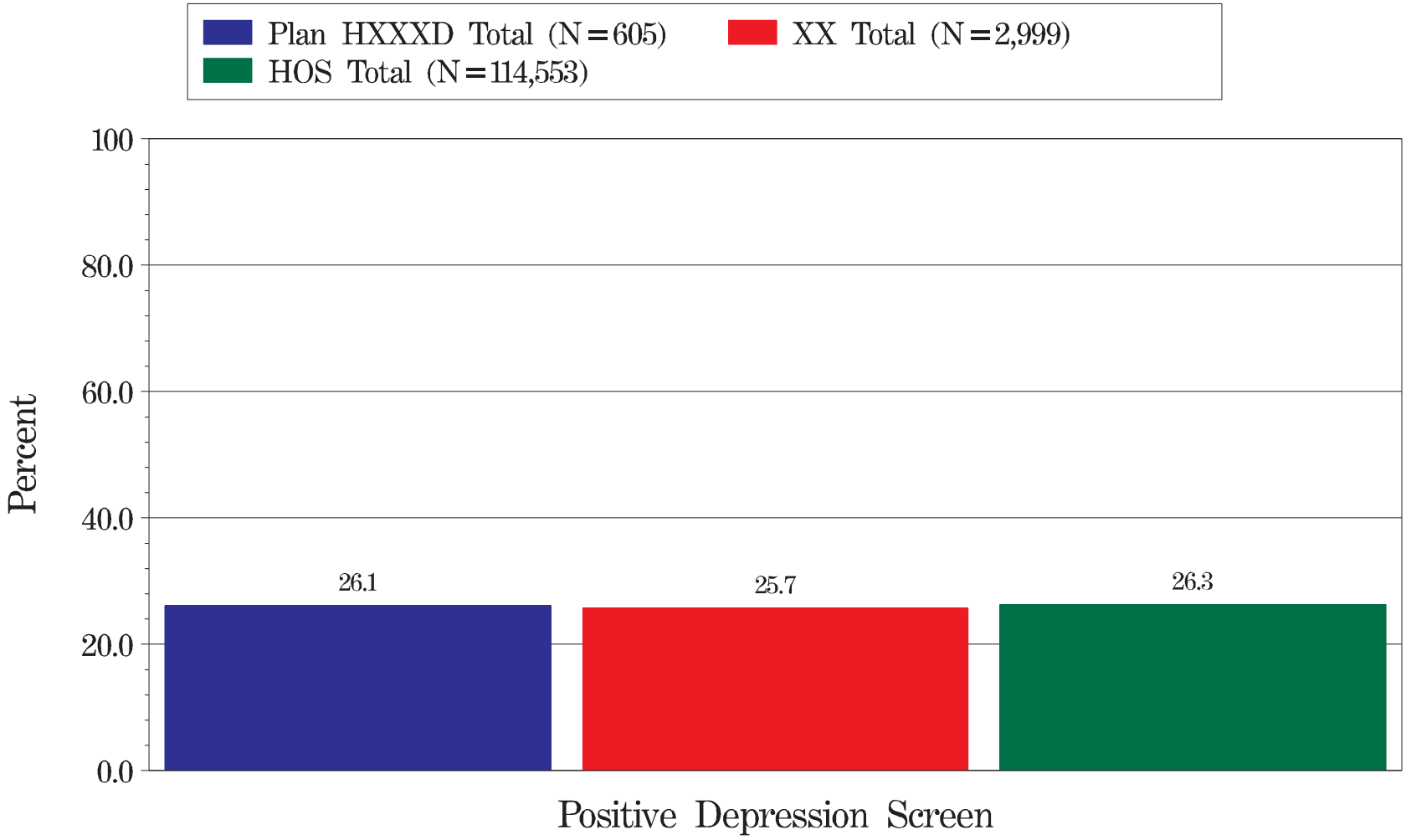
Percentages may not add to 100% due to rounding.

Figure 11: Comparative Health Question for Plan HXXXD, XX Total, and HOS Total



Data Source: Medicare Health Outcomes Survey Response
Responses to question #41: "In general, compared to other people your age, would you say your health is:"
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 12: Percent with Positive Depression Screen for Plan HXXXD, XX Total, and HOS Total

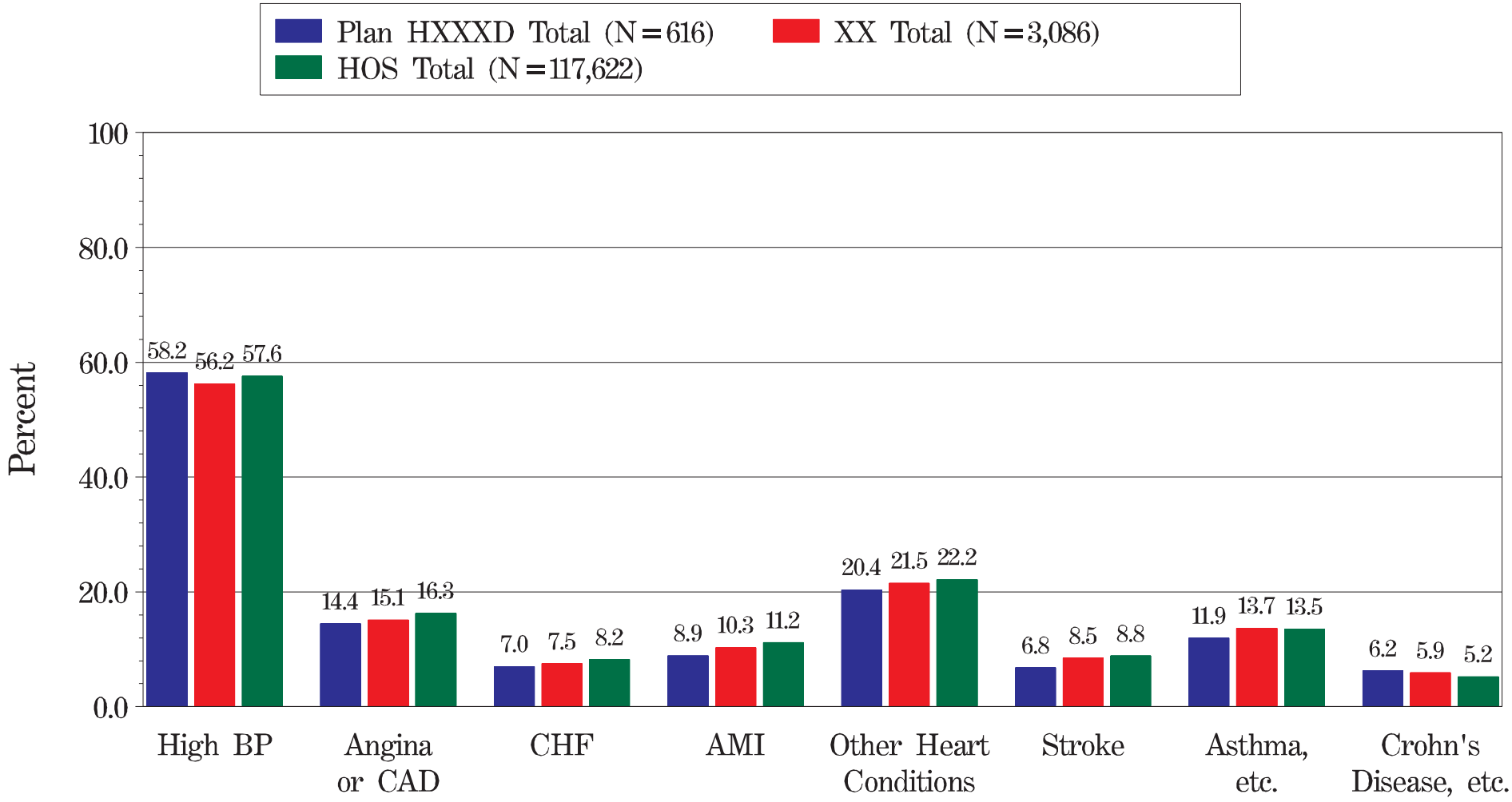


Data Source: Medicare Health Outcomes Survey Response

A beneficiary of the Medicare Health Outcomes Survey is considered to have a positive depression screen when he or she answers "Yes" to ANY of the three depression questions (numbers 38, 39, and 40).

Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.

Figure 13: Percent Distribution of Chronic Medical Conditions for Plan HXXXD, XX Total, and HOS Total



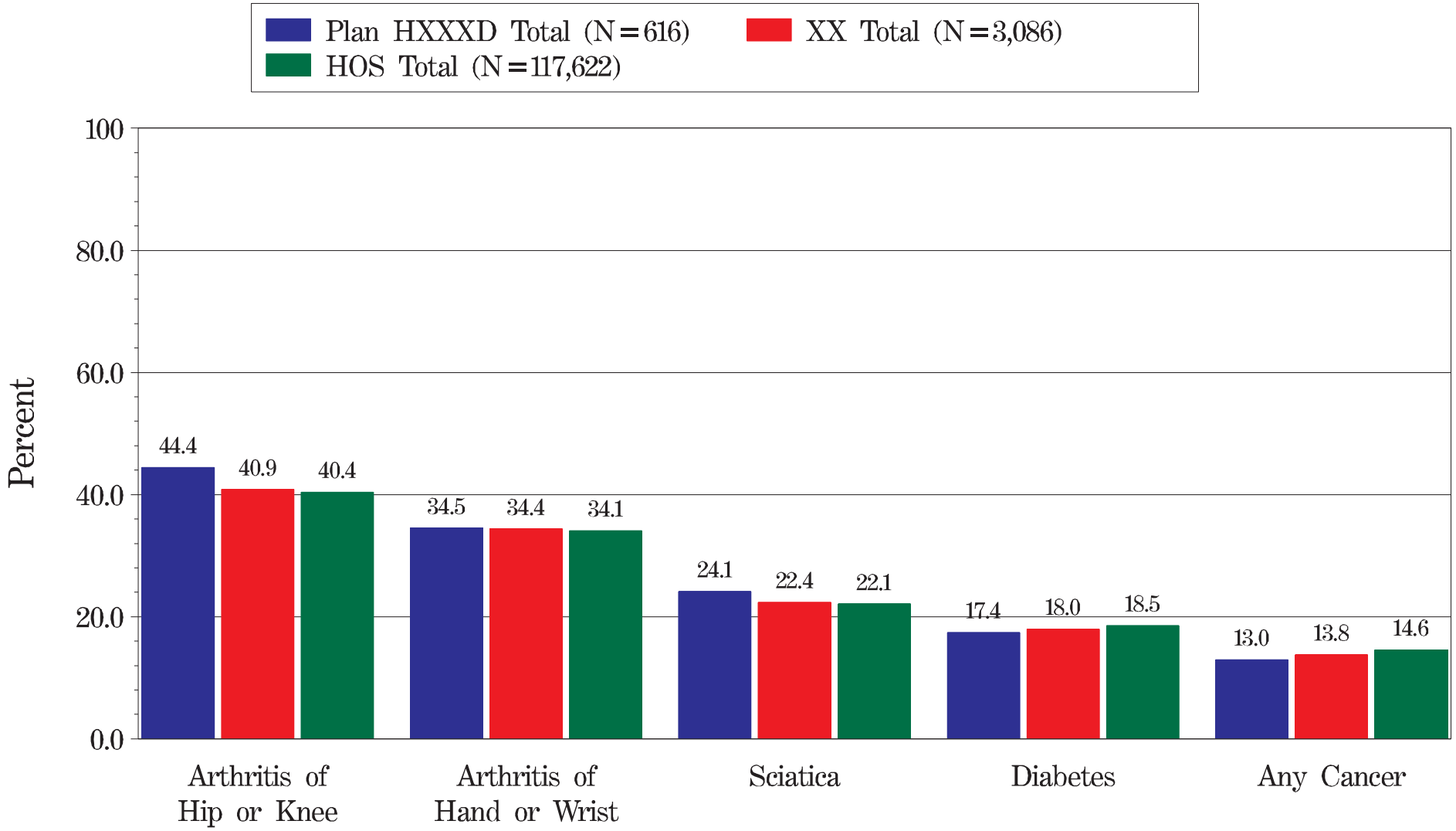
Data Source: Medicare Health Outcomes Survey Response

Asthma, etc. includes: asthma, emphysema, and COPD (Chronic Obstructive Pulmonary Disease).

Crohn's Disease, etc. includes: Crohn's Disease, ulcerative colitis, and inflammatory bowel disease.

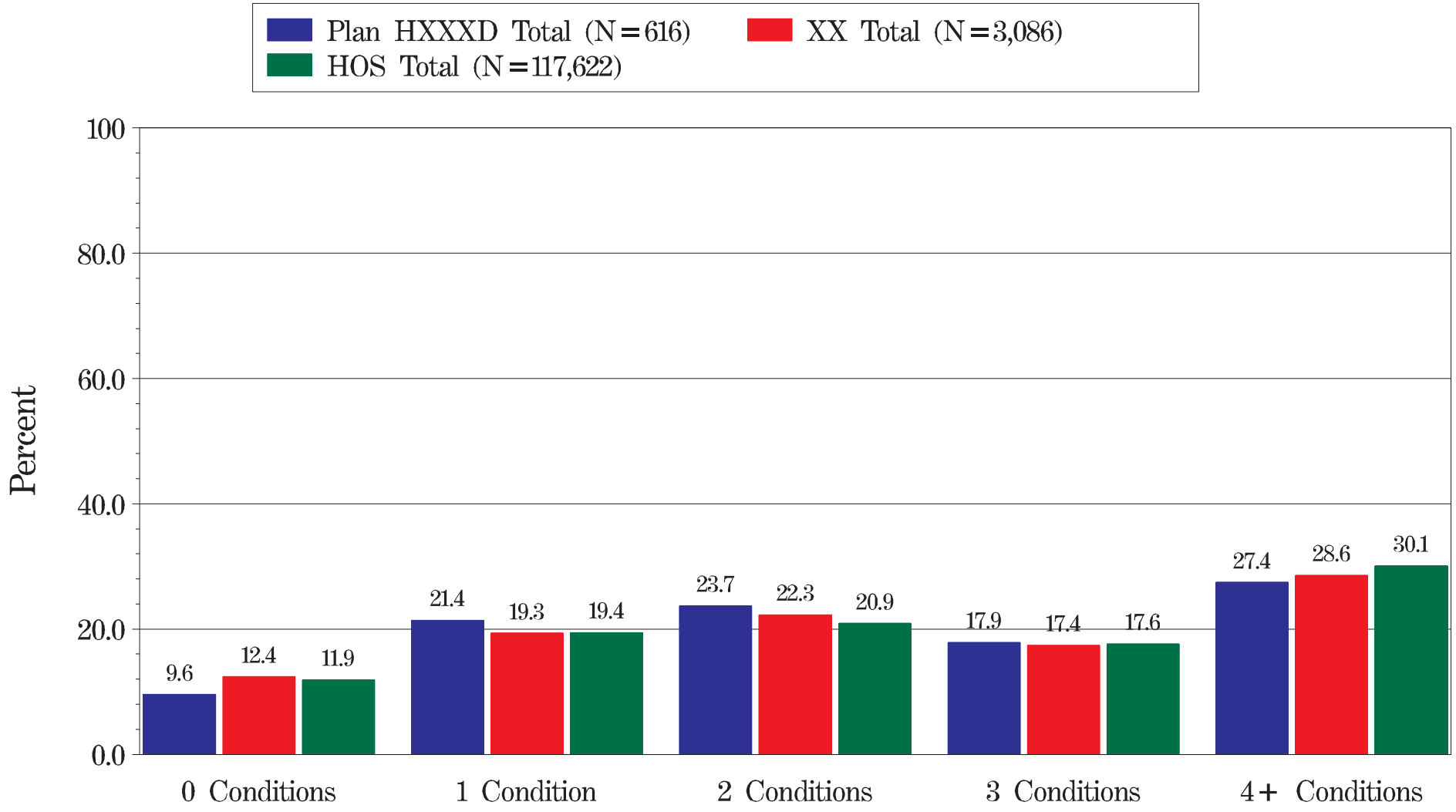
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.

Figure 14: Percent Distribution of Chronic Medical Conditions (Continued) for Plan HXXXD, XX Total, and HOS Total



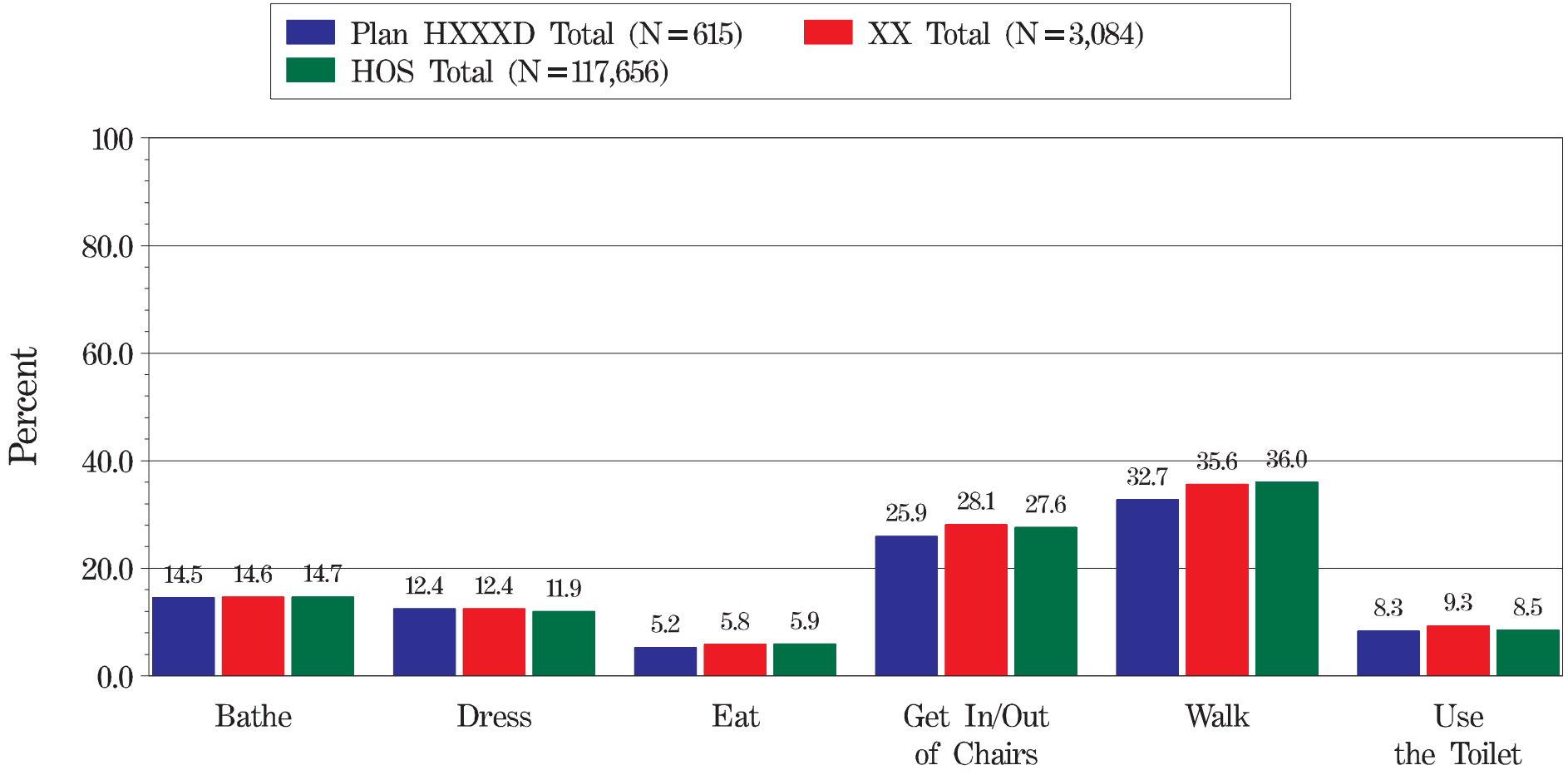
Data Source: Medicare Health Outcomes Survey Response
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.

Figure 15: Frequency of Chronic Medical Conditions for Plan HXXXD, XX Total, and HOS Total



Data Source: Medicare Health Outcomes Survey Response
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 16: Percent Distribution of Impairment in Activities of Daily Living* for Plan HXXXD, XX Total, and HOS Total



Data Source: Medicare Health Outcomes Survey Response

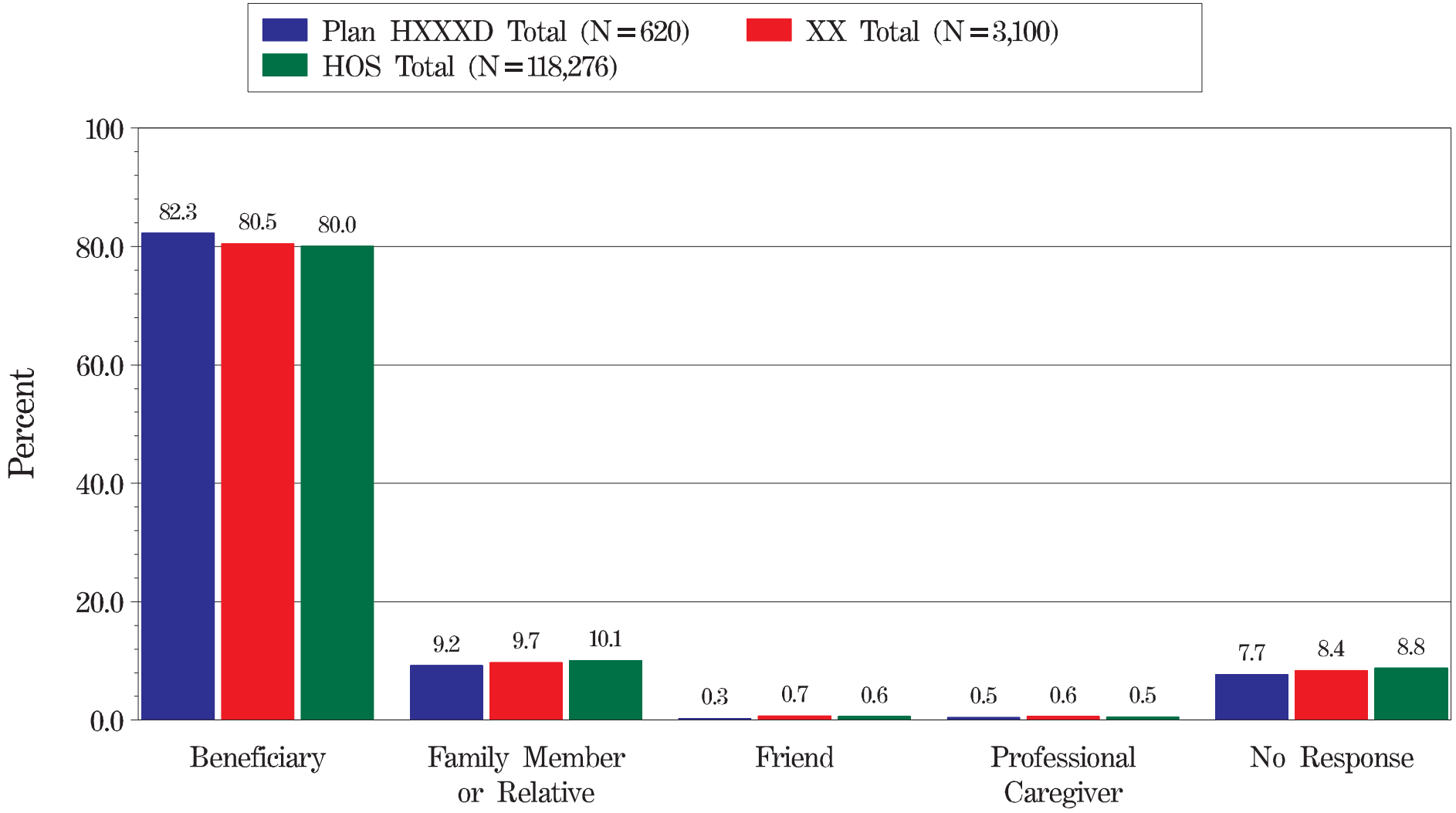
Responses to question #12: "Because of a health or physical problem, do you have any difficulty doing the following activities?"

Responses reporting difficulty or inability to do the activity were categorized as "Impaired."

*Adapted from: Gerald S. Adler, "A Profile of the Medicare Current Beneficiary Survey," Health Care Financing Review, Vol. 15, No. 4 (Summer 1994): 153–163.

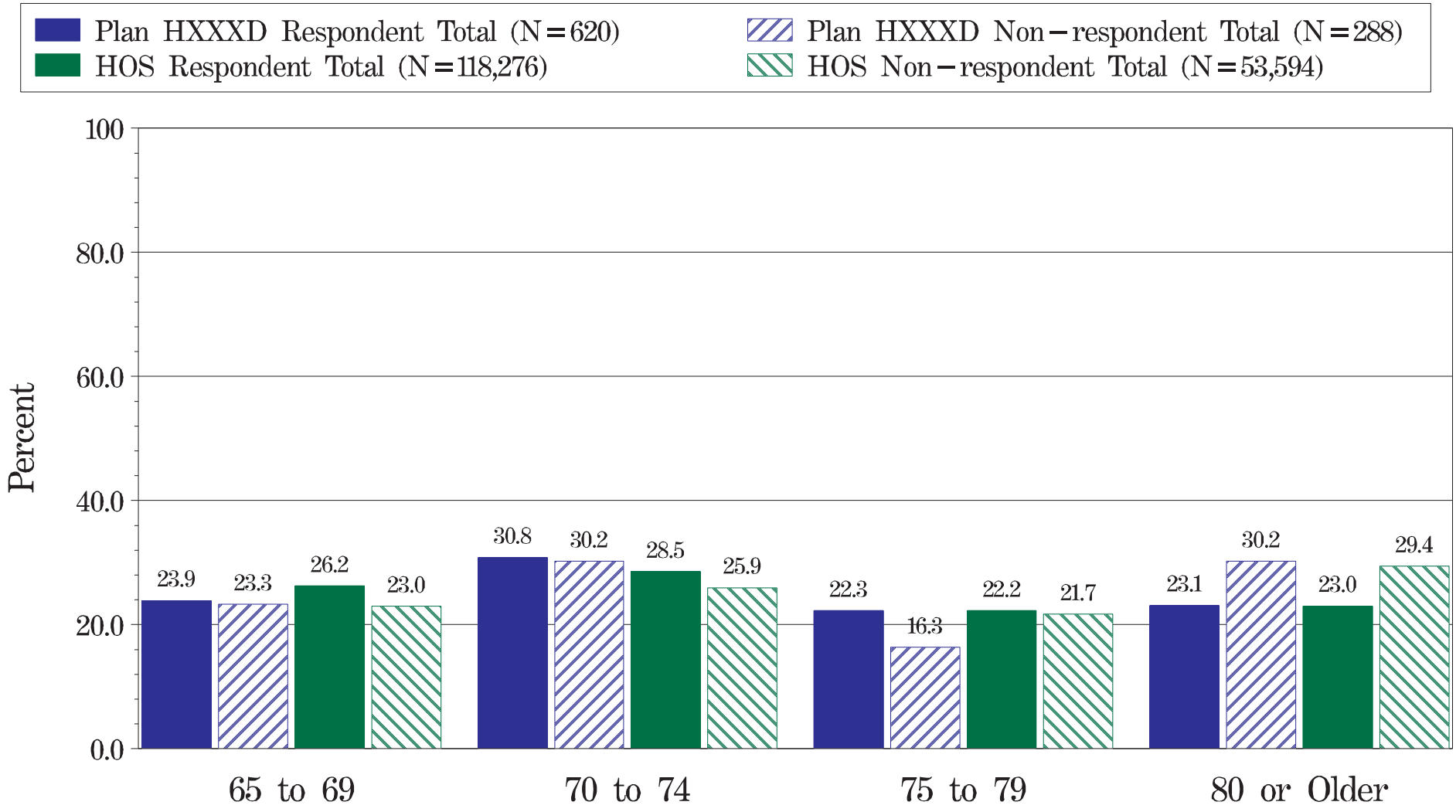
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.

Figure 17: Person Responding to Survey for Plan HXXXD, XX Total, and HOS Total



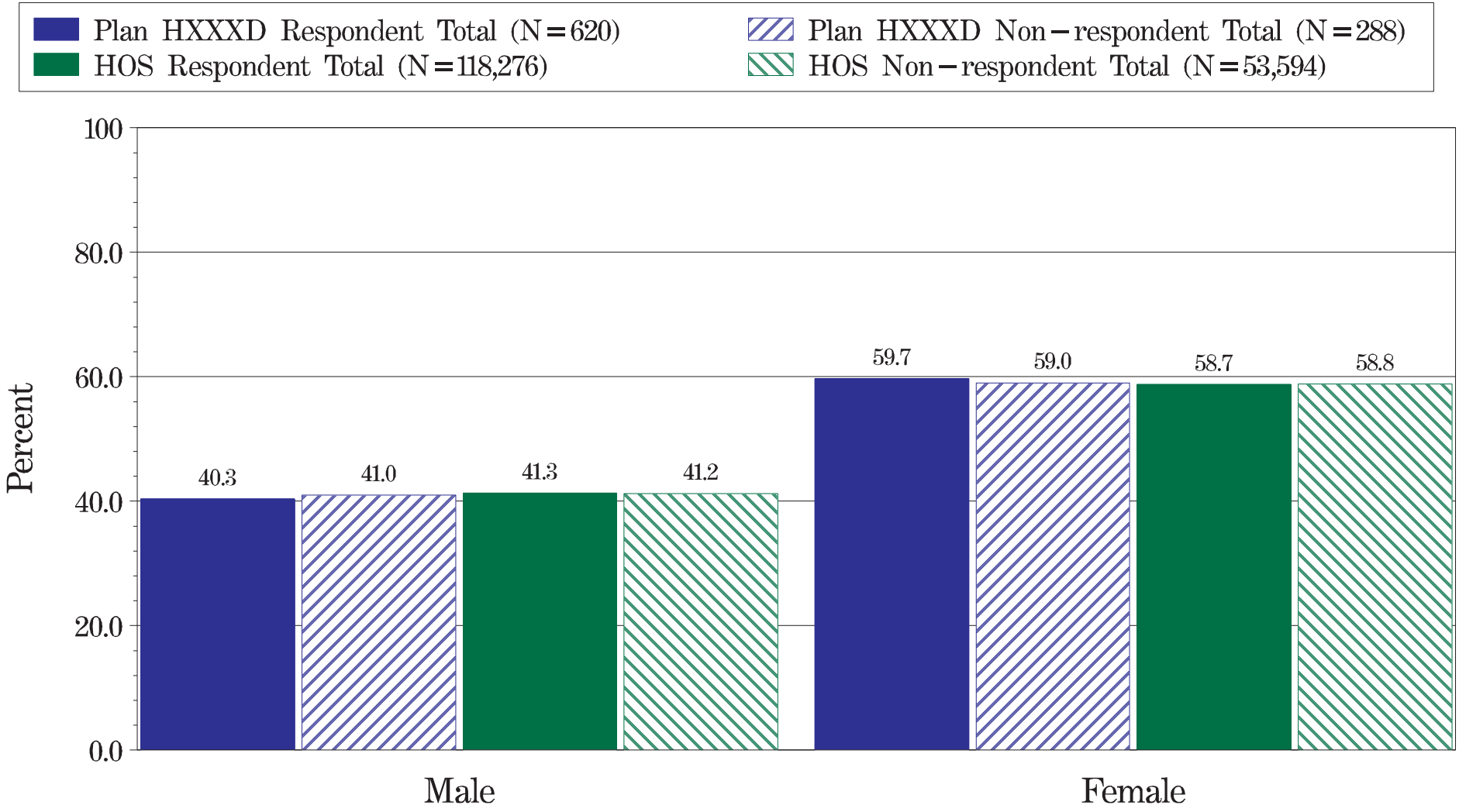
Data Source: Medicare Health Outcomes Survey Response
Sample is limited to eligible beneficiaries who are 65 or older and had a PCS and/or MCS score at Baseline.
Percentages may not add to 100% due to rounding.

Figure 18: Percent Distribution of Age Group by Respondents and Non-respondents for Plan HXXXD and HOS Total



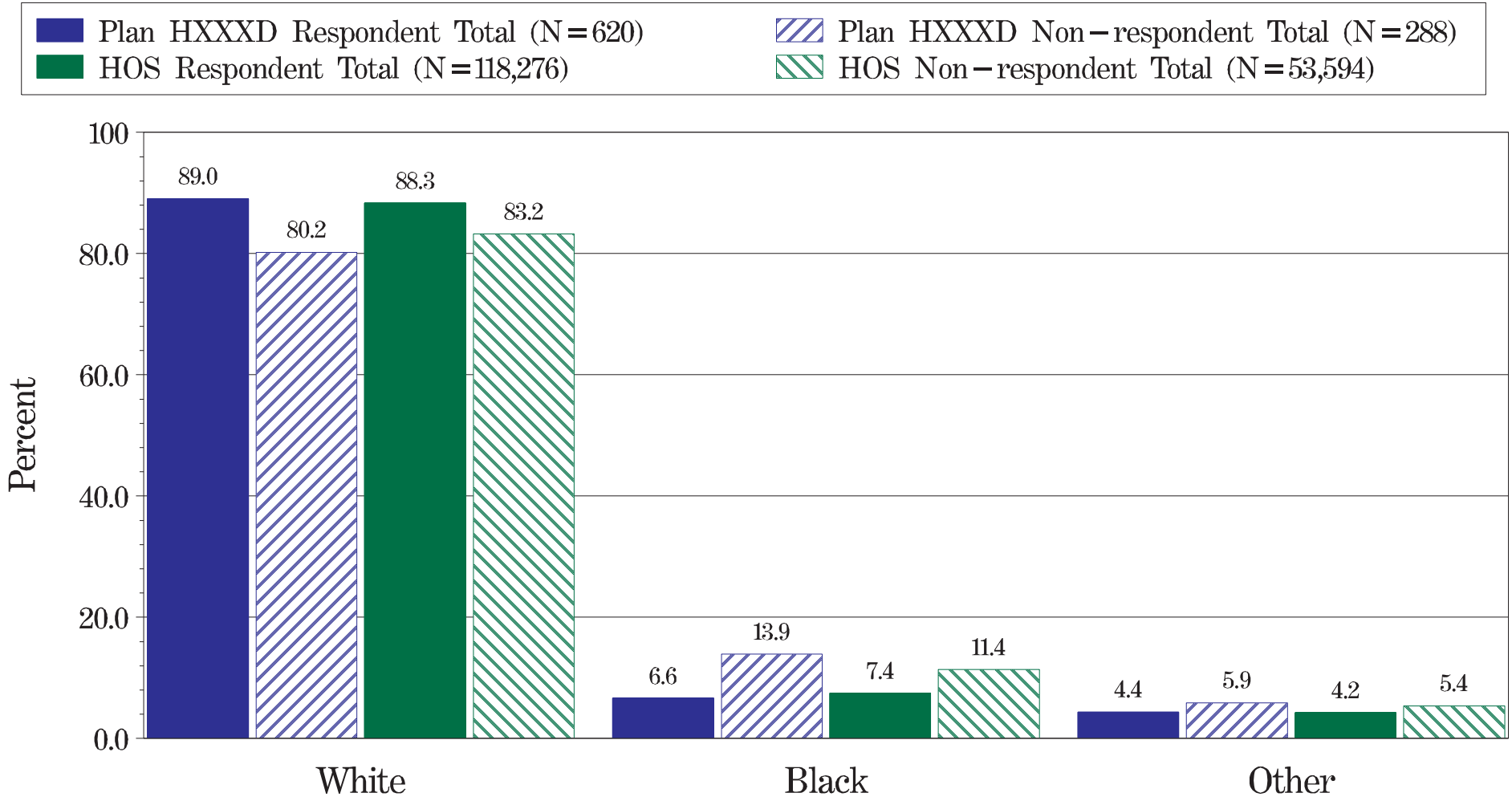
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older.
Percentages may not add to 100% due to rounding.

Figure 19: Percent Distribution of Gender by Respondents and Non-respondents for Plan HXXXD and HOS Total



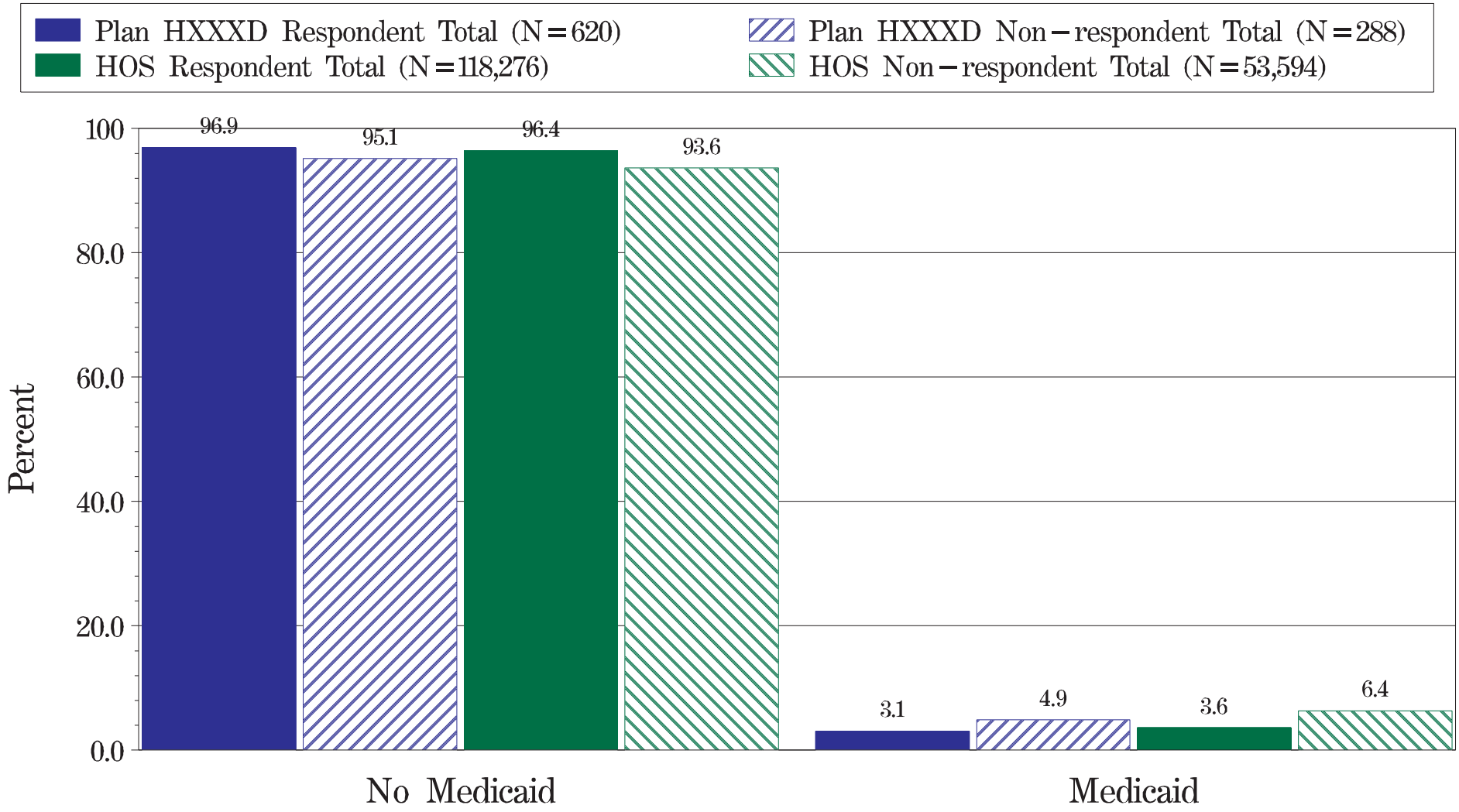
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older.
Percentages may not add to 100% due to rounding.

Figure 20: Percent Distribution of Race by Respondents and Non-respondents for Plan HXXXD and HOS Total



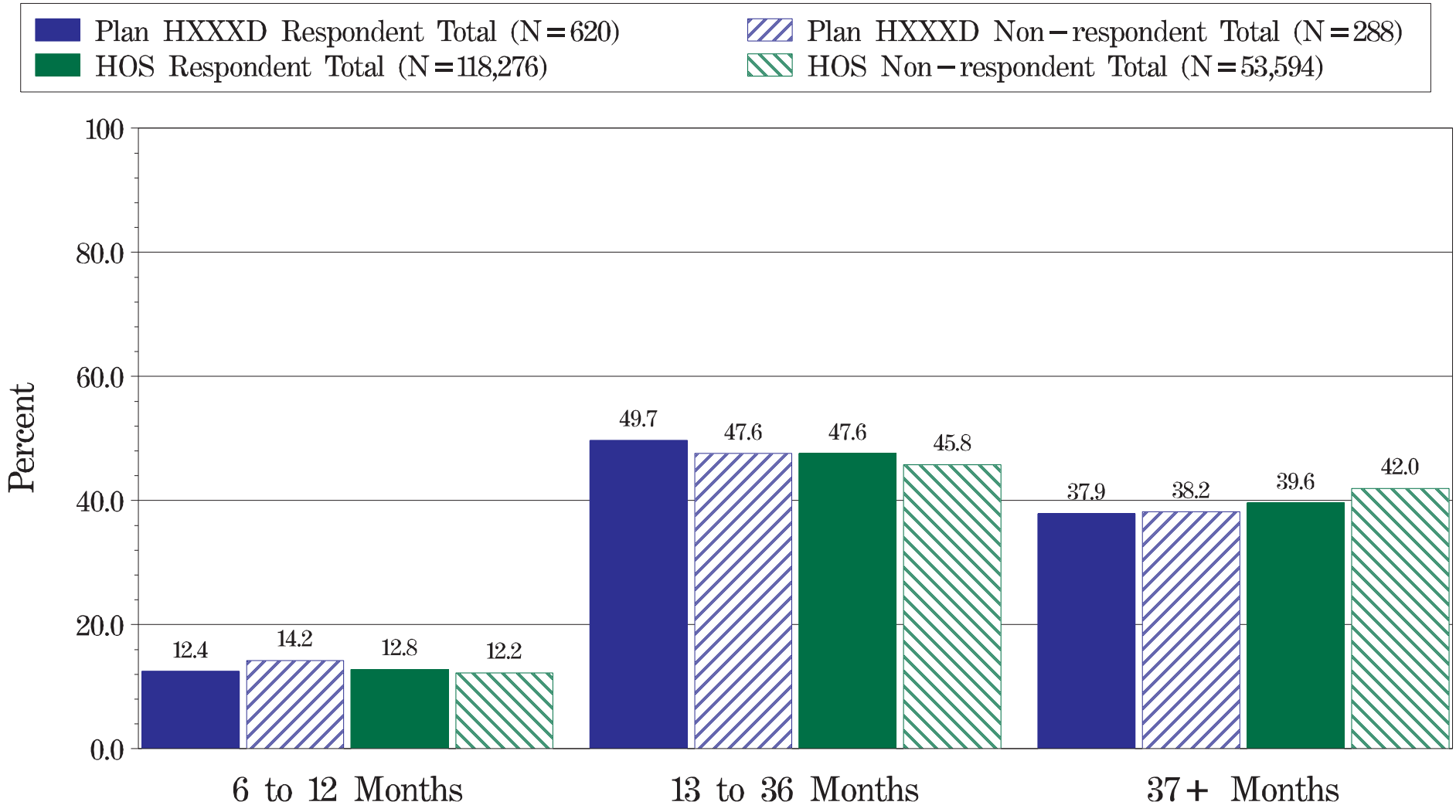
Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
A very small percentage of the "Other" category can be attributed to beneficiaries being coded as "Unknown."
Sample is limited to eligible beneficiaries who are 65 or older.
Percentages may not add to 100% due to rounding.

Figure 21: Percent Distribution of Medicaid Status by Respondents and Non-respondents for Plan HXXXD and HOS Total



Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older.
Percentages may not add to 100% due to rounding.

Figure 22: Percent Distribution of Enrollment Duration by Respondents and Non-respondents for Plan HXXXD and HOS Total



Data Source: Centers for Medicare & Medicaid Services Medicare Enrollment Database
Sample is limited to eligible beneficiaries who are 65 or older.
Percentages may not add to 100% due to rounding.